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LECTURES
ON
COMPARATIVE ANATOMY
AND
ANIMAL PHYSIOLOGY,

DELIVERED BY

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LECTURE X.

ON THE ORGANS OF SUPPORT OF THE GASTEROPODOUS AND PTEROPODOUS MOLLUSCA.

THE skeleton of the gasteropods is composed of the same materials, and is formed in the same manner, as the shells of the conchifera we were examining yesterday. They are generally in the form of univalve and unilocular, calcareous, and hollow cones, connected with the muscular system, and covering the surface of the body. They are composed of the carbonate of lime, mixed with condensed animal matter, which often forms a distinct epidermic layer on their outer surface, as we saw in the bivalves. These, exuded from the surface of the mantle, form a mass of considerable toughness and density, in which we can generally perceive a fibrous or crystalline arrangement of the particles, and a laminated texture. We can generally see that they are composed of a succession of layers, and that those layers are placed the one within the other, the new layers extending beyond the old. Examining the texture with care, even with the microscope, we can see distinctly that the substance of these shells is not permeated by vessels of any kind, either by absorbents, arteries, or veins, but that, like the shelly substances we were considering yesterday, they are of a homogeneous and quite extravascular nature. They have generally the form of a cone, shut at the apex and open at the lower extremity—the base. That cone we observe during the life of the animal to increase in magnitude; therefore, here, as in the former case, it is interesting to inquire by what means it continues still to retain its muscular connexion with, and to envelop all the soft parts of, the animal during its increase, and the gradual development of all its parts.

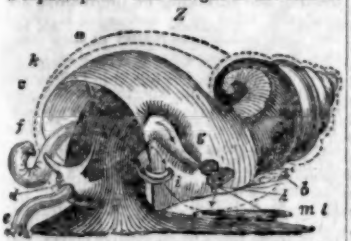
Experiments were early made by REAUMUR to determine the true nature of the calcareous shells thrown over the bodies of the gasteropodes. Apertures were made in the shell, and they were carefully watched to observe whether fresh carbonate of lime would be exuded from the margin of the apertures which were made in the shell. It was soon found that the orifices which had been made were closed up, and that the animal's mantle, spread over the surface of the body, had deposited a calcareous covering wherever apertures had been made in the shell. Upon putting a piece of adhesive substance over the openings on the inside, and watching what would be the result, it was seen that no new calcareous matter was exuded from the broken edges of the shell, but new layers were added, by the secreting surface of the mantle, to the inside of the adhering membrane. These experiments, repeated in various ways, and the observation of all the forms of these shells, show that they are secreted in successive deposits from the exterior surface of the fleshy mantle, and that they consequently correspond in their general form, and in the changes they undergo, with those of the mantle on which they are moulded. They possess no internal organization to enable them to grow like bones, or to repair the injuries or losses they may sustain. The texture of these shells is generally very hard and compact where they are thin, and more soft, porous, and laminated in their structure where they have thicker

parietes. The inner layers in the turbinated shells are often very hard, transparent, and glassy, while the exterior layers have a loose, fibrous, or minutely laminated texture. As they are extravascular substances, excreted from the surface of the skin, the various changes which they undergo after being once deposited, depend on the contact of the living parts. Although we often observe them materially altered in their form after their deposition, they are not in the condition of living bones. These organised skeletons we meet with in the vertebrated classes, which are truly organised skeletons, capable themselves of growth, of being absorbed, and of being again increased in bulk. Placed within the body, and surrounded externally by the living parts, the skeletons of the vertebrated animals must have possessed such an internal organization; and the plan is very different in them from that of the external unorganised skeletons of the invertebrata. Enclosed entirely within the soft parts of the body, the osseous skeleton could not be periodically thrown off from the body, therefore it had only two means of growth,—either by the superaddition of layer after layer upon the surface, and retaining the old within the new, or by removing the old altogether, and gradually depositing the new matter somewhat in the original form. The latter is the plan of formation we observe in the organised bones which compose the internal articulated and permanent skeletons of the vertebrated animals.

The shells of the gasteropods are, thus, unorganised exudations from the surface of the skin, and, as in the conchifera, they often have an epidermic covering, formed by the common dense albuminous matter which pervades the whole texture of the calcareous shell. This epidermis sometimes forms a continuous coat over the surface of the shell; sometimes the edges of its successive layers, continuous with those of the shell, extend out loosely from the surface, producing a laminated, or fibrous, or villous, covering to the shell. Sometimes it is not present as a layer, distinct from the common albuminous ingredient of the solid shell. But in all cases it is very distinct from the true epidermis covering the skin of the animal itself, as in the soft skins of other classes. The colouring matter of these shells accompanies the calcareous matter, being sometimes confined to the outer surface, beneath the epidermic layer, and sometimes pervading the whole texture of the shell. It is entirely removed by heat. The shells of the gasteropodous and other mollusca have, thus, analogies both with the epidermis and *rete mucosum* of higher animals, and with the articulated tubular external shells of the articulated classes. Many of the gasteropods have no trace of external or internal skeleton, as the *scyllæa*, the *tritonia*, the *doris*, and many other naked and blind hermaphrodite genera. Some have only a small and thin pellucid lamina contained within the skin of the back, as the *aplysia* and the slug. The external shell is often so small as to cover only a portion of the animal's surface, as in the *testacella*, the *cryptostoma*, and the *carinaria*. The enveloping shell is generally in form of a cone, wide and open at the base, and closed at the apex. It is composed of eight transverse parallel imbricated laminæ, in the *chitons*. It is perforated in the *haliotis*, the *fissurella*, the *emarginula*. The enveloping solid cone of the gasteropods is considered as analogous to the two valves of the conchifera, united together to form a solid univalve, and indications of the original separation of the pieces are seen in the fissures of the *emarginula*, the *rimula*, the *fissurella*. The shell is a simple straight cone in the *patella*, slightly bent in the *dentalium*, a little twisted in the *crepidula*, the *haliotis*, the *capulus*. It revolves around its apex in the *planorbis*, and some of the *helices*, forming a circular disk with the revolutions nearly on the same plane, like an ammonite. In most of the univalves, however, the plane of revolution is constantly changing during development, and the shell assumes a spiral form more and more acute, according to the quickness with which it changes its plane of revolution. You will observe, that the shells which have thus assumed a spiral or turbinated form, have almost always revolved around an axis in such a manner as to leave the apex and the whole spire of the shell on the right side of the animal, when it extends its head from the aperture. From observations which I made several years since on the development of the embryo of the common buccinum undatum, and which were published in Sir David Brewster's journal, I am inclined to ascribe this spiral twist of the shells of gasteropoda to the action of the heart, and to the respiratory organs, which are situate on the left side, and to the descent which the foot of the animal makes over the columella, in order to reach a solid surface to creep upon. The diastole of the heart bends the anterior free part of the body to the right side, and would cause the shell to revolve on the same plane, were that cause to operate alone, but the constant descent of the foot over the surface of the pillar, causes the plane of revolution to change at every instant, and by these two causes, combined with the constant extending of the

respiratory fold, the spiral form of the shells appears to be produced. In a few shells the spire is found directed to the left side of the enclosed animal, and in those cases the heart and respiratory organs are found on the right side, thus corresponding with the transposition of the spire or apex of the shell.

These skeletons chiefly owe their existence, their growth, and their form, to that part which is called the mantle. It is a glandular and fleshy fold, from beneath which the head extends, which envelops the organs of respiration and the great centre of the circulating system, and extends back to the commencement of the abdominal viscera. It extends, as you see in the *buccinum undatum*, to the commencement, in the male, of the testicle and the liver; in the female it extends back to the commencement of the ovary and the liver. It is shut at this posterior part, so that it forms a sac (Z, a), open only at its anterior extremity, like that of a cephalopod. The margin of the mantle



or sac is of a thicker texture; it is of a glandular nature; it is covered with small shut sacs or pores, which are glandular, and secrete the calcareous matter with animal matter,—that condensed albuminous substance which, with the carbonate of lime, compose the solid skeleton.

When we, therefore, examine the form of the cone ($Z\,k$; A^*) which is thus thrown out upon the surface of the body—and envelops, completely, by being closed at its apex (A^*, b), the whole posterior part of the body,—we find that its form is generally turbinated, that it is twisted more or less upon itself, and forms that appearance which is denominated turbinated, univalve, and unilocular, in shells. The aperture

of the cone is the base of the cone (A^*, a); and we find that one margin of the aperture lies over the neck of the animal, when it extends its head from the aperture. In the specimens before you of the *buccinum* (Z, A^*), you will observe the animal's head (Z, d), with its two tentacula, with their eyes at the base (Z, d) the mouth between and below the tentacula, from which a proboscis (Z, e) extends,—all these parts projecting from below one of the margins of the aperture of the shell ($Z\,k$). The margin lying across the neck is called the upper lip of the shell. When the animal comes from the shell, then it descends over the lower margin of the aperture, or the lower lip, and arrives with its foot upon a solid surface, on which it creeps. The foot (Z, l) thus covering the lower part of the body, has given rise to the name *gasteropoda*. They creep upon this muscular disk covering the abdominal surface of their body, as you see in the *doris*, or in the common snail.

As the thickened glandular margin of the mantle chiefly forms or secretes these calcareous substances, they must necessarily assume a form very much dependent upon that of the margin of the mantle, which is the most variable as well as influential part of their form. Holding, therefore, this shell of the *buccinum* (A^*) as it is placed on the body of the animal, you will observe that the apex of the cone extends to the right side of the animal, and that there is a canal (A^*, a) upon the left side—the canal which transmits the muscular grooved syphon ($Z\,i$), which is continued from the margin of the mantle, and conveys water to the respiratory organs ($Z\,g$) placed on the left side in the open cavity of the mantle. The forms of the skeleton which are most common in this class, are those of the pectini-branchiate gasteropods, so named from the pectinated form of their gills ($Z\,g$); I therefore select one of the most common forms of this order, to explain the names given to the different parts of these turbinated univalves, and by selecting the common whelk, or *buccinum*, for this purpose, you have every facility of studying the structure and forms of all the parts I have occasion to describe.

We have seen that the spire formed by the convolution of the cone is placed upon the right side of the body, and that the canal of the shell is placed upon the left. The respiratory canal transmits a fleshy grooved organ (Z, i), which is capable of being converted into a tube by the meeting of its two margins. This siphon serves to draw in the water, even when the rest of the animal is much withdrawn into the shell. By extending itself out through the canal of the shell (A^*, a) placed upon the left side, and forming itself into a tube, it conveys the water to the two laminated respiratory organs extending along that side. The streams of water passing over the respiratory organs meet with an impediment, from the shut-end of

the mantle, to their further progress backwards. The streams are directed by the shut posterior part of the mantle, over to the right side of the body, where are placed the orifices (*Z, c*) of the intestinal canal, and of the genital organs. You observe the termination of the oviduct close to the anus in the female; and you observe in the male, the male organ (*Z f*) originating close beside the anal orifice. The streams of water by these means first aërate the branchiæ upon the left side; they then pass over to the right side, and in passing out from the mantle they assist in the expulsion of the feces, and of all the other matters that are conveyed into the cavity of the mantle.

The foot of the gasteropod, in passing out over the lower lip, produces the smooth appearance, and the rounded form, which you observe the lower lip for the most part to present. The lower lip thus exhibits the appearance of a round pillar, from the motion of the foot of the animal over it and downwards, in order to reach the solid surface to creep upon. That pillar (*D** 1, *b*) is observed to extend through the central part of the whole of the spire, and is the axis of all its revolutions. It forms the part called the *columella*. In the section of the shell, you perceive the direction taken by the columella, from the lower lip to the apex (*D**, 1, *a*) of the shell. That columella or pillar is generally solid, sometimes, however, the revolutions of the spire are at such a distance from each other, as to leave a vacancy in the middle of the columella. That vacancy or cavity is called the *umbilicus*. From the mode of its formation, being a mere vacuity or interstice left by the revolutions of the cone at a greater distance from each other than in the others, where the columella is solid, you will at once perceive that this umbilicus can have no communication, in any part of its course, through the columella, with the cavity of the cone itself, which lodges the animal.

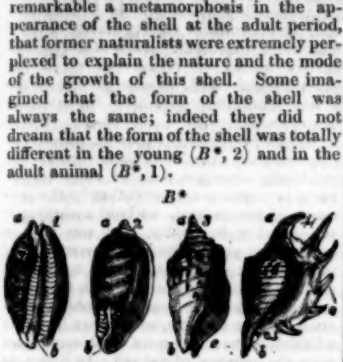
The turbinated shells of the gasteropods all begin by being short straight cones, and there is a great similarity at the earlier periods of their formation among forms of this gasteropodous class, though afterwards the most diversified. Changes which affect the general form take place frequently during the earliest period of the animal's life; at other times they take place on its arrival at the adult state. When the animal arrives at maturity, the free margin of the mantle frequently assumes an extraordinary development. We observe that the upper lip of the shell—the upper margin of the aperture—undergoes at that period also a remarkable corresponding change; so great a change, that if you were to compare the young animal with the adult, you would at first scarcely credit that the two shells belonged to the same individual, as I exemplify by this species, the *pterocera scorpio* (*B** 3, 4). In the young condition of the shell you will observe, that the upper lip (*B** 3, *c*) is quite plain, without projections or ornament, and the apex (*B**, 3, *a*) is very prominent; at a more advanced period it begins to present inequalities, elevations on certain parts of its course; these several elevations increase as the shell advances to maturity. They now exhibit a definite arrangement. They are observed to extend outwards as the mantle has its folds developed in that direction. They follow the extension of the mantle at maturity, until they form the lengthened curved prolongations which are in this specimen beginning to have their margins converge closely to each other, so as to form seven tubes (*B** 4, *c*). These tubes, by the slow retreating and shrinking of the mantle, are gradually filled up by successive layers of the same calcareous matter in their interior, until what originally was a series of tubes around the margin of the shell, the upper margin of the aperture of this *pterocera*, are converted into solid processes. The animal has arrived at maturity when these seven tubes have reached their greatest distance from the margin. The process of filling up these tubular projections takes place at a period of life past maturity. Upon observing the process of the filling up of these tubes by successive layers, you will distinctly see that the mantle had its marginal folds gradually diminishing in their extent, until it assumed and passed through, in a reversed direction, the same series of developments which it had gone through to arrive at its maximum, so that at its old age it has arrived at that simplicity in the margins of the mantle and the upper lip of the shell, with which it commenced its career. When they are thus solid, there is of course no passage for any prolongation of fold of the margins of the mantle, and none now exist.

Having thus formed a distinct idea of the manner in which these projections of the *pterocera* are formed and developed, it is easy to conceive what all the spines and processes that are so numerous and so diversified in their forms originally were, and how they grew on the exterior of the shells of the gasteropods. They originate chiefly from changes of the upper lip. You see this again illustrated by the common *strombus gigas*, which in the earlier part of its life has a plain upper lip with an even and thin margin, and which is in the same direction with the rest of this

convoluted and turbinated cone; but when it arrives at maturity, the upper lip is enormously enlarged by the expansion of the margin of the mantle, and produces this large recurved or effuse upper margin of the shell which so much changes its appearance on arriving at the adult state.

The most remarkable change which is produced in the shells of the gasteropods by the development of the upper lip at maturity, is that which we see in the animals of the genus *cypræa* (*B** 1, 2). It produces so remarkable a metamorphosis in the appearance of the shell at the adult period, that former naturalists were extremely perplexed to explain the nature and the mode of the growth of this shell. Some imagined that the form of the shell was always the same; indeed they did not dream that the form of the shell was totally different in the young (*B**, 2) and in the adult animal (*B**, 1).

*B**



Assuming that the form was always as you find it in the adult, assuming that it must be similar in the young state, they endeavoured to account for its growth in the ordinary manner, by the addition of layer after layer to the anterior. It was easy to perceive, however, that from the narrowness of the aperture of the shell in the adult, it was impossible for it to grow in that manner, if this was its form through life. Two explanations were had recourse to, as it was obvious that the addition of fresh layers to the narrow margins of the shell would soon close up the aperture that was abandoned. It was therefore supposed that it was an organised shell, and that, being permeated by vessels, it grew in all parts like the bones of vertebrated animals, and enlarged as the animal enlarged which it enclosed. Upon examining the texture of the shell, however, it was seen to be as dense, nay, even more dense in its texture, more compact and homogeneous, than most of the other shells of gasteropods. This theory was therefore disproved by observation, and it was contrary to all analogy that it should be an organised substance. Another hypothesis was had recourse to, to explain the mode of growth of the *cypræa*. As the skeletons of the articulated classes of animals are exuviable, as they can be thrown off, and are thrown off periodically from the soft parts of all portions of the body, it was imagined that the cypræa was enabled to grow, by throwing off the old shell, and forming for itself, upon the surface of its body, from time to time, a new shell, of the same form, but of larger dimensions. This, however, had never been seen in the cypræa; it was contrary to all analogy; no phenomenon of the kind is known in the molluscous division of the animal kingdom.

Observing the important change effected in the form and appearance of shells at maturity, by the metamorphosis of the upper lip, it was natural to suspect that this was not the form of the young shell—the form which you see in the adult. Upon removing the upper lip of the cypræa artificially, we arrive at a conical turbinated shell, with a distinct apex and spire, directed to the right side; we arrive at a shell with thin parietes, but dense in its texture, and having the ordinary turbinated form—a form which you see is quite lost by the extension of the upper lip over it in the adult *cypræa* (*B** 1). It was therefore found, that the difficulties which had perplexed former naturalists arose in the cypræa, solely from a remarkable development of this upper lip at maturity—a change in the upper lip, which causes it not only to be remarkably enlarged and thickened, but to extend to the right so far as to conceal from the sight every trace of the spire (*B**, 2 *a*). In the adult state of the cypræa, you see no trace of epidermis covering the exterior of the shell. In the specimens before you, which appear so polished and beautifully coloured and shining on the surface, no artifice whatever has been used to produce that appearance; they are precisely as they were taken from the bottom of the sea with the living animal.

In observing the development of the upper lip of the shell in the *strombus gigas*, you will perceive that it presents a beautiful rose-coloured, smooth, shining surface, which has a tendency to turn backwards over the rest of the shell. Were this expansion and reversion of the upper lip to go on, and to a great extent (to a much greater extent than ever it does in the strombus gigas), it would conceal the apex of the spire, it would conceal every part of the surface that was originally covered by the epidermis, and would actually turn backwards to meet the lower lip. What therefore was in the young shell the exterior surface, would be entirely concealed, and what was the interior rose-coloured surface of the shell, would thus be continued over the whole exterior. That is what has taken place in the cypræa; the mantle, both at its

upper and its lower margin, is so much developed, that it is reflected over both lips, and over the entire surface of the shell, and, consequently, excretes calcareous matter and colouring matter over the whole exterior of the old shell. The edges of the mantle proceed so far backwards, indeed, over the exterior surface of the shell, that they actually meet at the upper or back part, the lower margin of the mantle reaching as far as the upper, and they produce at their line of contact that coloured and sometimes grooved line which you always perceive on the upper smooth surface of the adult cypræa, but never on the young shell. You, therefore, would not look, consistently with this statement, for epidermis upon the surface of the cypræa in the adult state, but only for that beautiful coloured and glistening surface which you see confined to the interior surface of most other shells.

Similar changes, however, are sometimes effected at various successive periods of life, by changes in the state of the margin of the mantle. This is beautifully illustrated by this large specimen of the *murex* (C^*). It is supposed that as this animal arrives at maturity, and its genital organs come to be capable of performing their function, they influence much the form and development of the mantle, and even the form of the shell. When the genital organs are developing for the purpose of continuing the race, the vital powers seem, as it were, concentrated upon that function. The margin of the mantle has, thus, less of the blood sent towards it. It becomes atrophiated in its development, it assumes a plainer outline, and as the margin of the shell keeps pace with the margin of the mantle, it assumes the same plain form. We observe that the margin of the shell here assumes a plain outline at regular successive periods. But when the function of generation has been fulfilled, and the whole vital powers are concentrated on the development of the individual, one of the principal parts to which the blood is directed, is the thickened secreting margin of the mantle, that important glandular organ which is to excrete the calcareous covering for the protection of the whole body, and for the attachment of the retractor muscles. The vitality appears to be concentrated in that point. It shows this by the high development which it assumes. It expands in a beautiful fimbriated manner; the margin of the shell extends, and keeps pace with its development, producing all the beautiful expansions (C^*, *d*) which you observe to surround the upper lip.

The function of generation returning at the stated season of the year, the vital powers are withdrawn again from the margin of the mantle, which assumes the simple form it had before, and thus we find, alternately produced, the series of transverse elevated folds {C^*, *b*, *c*, *d*), which we observe at determinate intervals on the exterior of all the revolutions of this elegant rose-lipped *murex*. It is thus also that we account for the regularity of their transverse direction. Each of these successive series of transverse elevations must have formed, at one period of the animal's life, the upper lip of the aperture of the shell.

Many of these shells present transverse ridges on the exterior of their revolutions, so closely arranged that we cannot refer them to any annual revolution in the economy of the animal, without assigning it too great a longevity, and too slow a growth, as you observe on the surface of these *harpæ*. The parts of the turbinated shells which are in contact with the living animal, are for the most part liable to constant change of form, sometimes from the addition of new deposits, and sometimes from the removal of the old. In many, as you will observe by the sections of the *harpa*, the *dolium*, and the *cypræa*, the inner surface of the shell has suffered nothing by being in contact with the living parts; the striæ, the prominences, and even the colouring matter, which were originally on the outer surface, have preserved their appearance throughout the whole of the interior of the revolutions. These shells have grown, in fact, solely by the revolution of the wide upper lip around an axis, and such shells as thus exhibit no change on the lower or columellar side of the cone during their whole development, have generally thin parietes, and hence, probably, the necessity for transverse or longitudinal thickened bands, or enlargements of the upper lip to strengthen them. Some, as the *strombus*, add new matter to the lower or columellar surface of the hollow cone, as well as to the upper, during their whole growth, thus covering over the superficial colouring matter by the new layers, and generally presenting thick parietes through the whole of the revolutions, and a very thick and solid columella. In many of these shells, however, where the wide expansion of the upper lip sufficiently covers and protects the smaller revolutions, the total weight of the shell is greatly diminished, without weakening its strength by carrying forward the calcareous matter of the inner or

first-formed revolutions, and depositing it on the exterior surface of the last turn (*D** 3, *b*), which alone is exposed to danger from external pressure. This you perceive in these sections of the *cones*

(*D** 2, 3), and *olives*, where the calcareous matter of the shell is almost entirely carried forward from the inner revolutions (*D** 3, c), and serves to thicken only the last-formed exterior turn of the cone (*D** 3, *b*). The inner turns of these shells, indeed, have not only been reduced to their thin, transparent, vitreous, interior lamina, but even that in many parts has become perforated and abraded. No such abrasion or absorption has taken place at the apex of the spire (*D** 2 *a*, 3 *a*) in the *cones*, where the shell retains great thickness to protect the animal on that side, and we can there best perceive the changes which have been effected by the contact of the living parts with the unorganised calcareous deposits. We observe at that part that the original superficial colouring matter has not been injured by the successive laminated crystalline layers, which have been successively deposited upon it by the revolutions of the upper lip round the apex. The thick exterior wall of these *cones* presents a fibrous appearance in the fractured specimens, which is produced by the edges of the very minute, thin, rhomboidal laminæ which compose its texture. These thin crystalline laminæ which the lime has assumed in the consolidating animal matter of the shell, are directed from the outer to the inner surface of the parietes, the direction best calculated to give strength, and the successive layers which compose these thick parietes have their laminæ a little inclined from the straight line, so as to present zig-zag lines in the fibrous texture. In some of the turbinated shells of gasteropods, the turns of the cone mount over the top of the projections they encounter on the surface of the former turns, without in the least altering the projecting laminæ by the contact of the living parts, as you perceive in this *scalaria*, where the successive turns of the spire scarcely touch each other. In the *vermetus* the turns of the cone are at a distance from each other, like the turns of a *serpula* among the red-blooded worms. But the varieties of form presented by shells of this class are endless, and present an interesting and important subject of study for the zoologist and the cultivators of geology.

We observe that the nacreous lustre of many of these specimens of *haliotis*, *turbo*, and other gasteropodous genera, is not inferior to that of any of the conchifera we were examining yesterday. The shells of the fresh water and of the land gasteropods, are almost always very thin-pellucid, and delicate, when we contrast them with the massive shells of marine animals, which have more calcareous matter at their disposal, and the shells of which have to encounter the moving gravel and stones and rocks of the ever-agitated ocean. Many of the floating gasteropods, and those which adhere to floating plants in the open sea, have no shells whatever, and the same is the case with many which creep securely by a large abdominal foot on the under surface of rocks and plants on the shallow shores of the sea. The foot by which the gasteropods with turbinated shells creep on the solid rocks, you perceive in the *buccinum* (*Z*, *l*), extends backwards under the neck where it is continuous with the retractor muscle (*Z*, *b*), and is fixed to the columella, the most solid part, the pillar of the shell. This retractor muscle is constantly shifting its point of attachment and advancing along the columella, like the creeping of the adductor muscles of conchifera along the valves. The foot has also attached to it another important solid part, called the operculum (*Z*, *m*), which covers exactly the aperture of the shell (*A**), when the animal has withdrawn itself into the interior. This operculum is sometimes strong and calcareous, sometimes horny and elastic, and often, particularly in the land and fresh-water species, it is entirely wanting. It presents spiral lines on its surface, which mark the limits of the successive layers, by which it is formed like the shell itself. The hybernating species, like the snails, which want an operculum, close up the aperture of their shell, when they retire to their winter slumber, with a thick deposit of calcareous matter, called an *epiphragma*, which is not connected with the muscular foot, like the true operculum, but only with the aperture of the shell; so that the operculum is like the flat valve of an *oyster*, or of a *gryphæa*, and is attached and used in the same manner. The *operculum* is a permanent part of the animal's structure, but the *epiphragma* is only temporary, being broken up and formed anew each season. In many testaceous gasteropods, where the muscular foot extends over the whole abdominal surface of the body, as in the *patella*, the

haliotis, the *chiton*, and serves to fix the animal to the surface on which it creeps, it is obvious that an operculum is unnecessary, and could not exist; the rock to which they adhere is their operculum.

Now an acquaintance with the laws which regulate the forms of all the solid parts of the gasteropods is of great importance in the study of conchology, which is so intimately connected with all the speculations of the geologist respecting the past condition and the revolutions of our globe. Notwithstanding the infinite variety of the forms of univalve unilocular shells, we observe the same plan of formation, from the thin horny lamina concealed in the skin of the back, or the simple hollow cone of a *patella*, to the most complicated and elegant forms of the turbinated and ramified *murices* (*C**); so that we can more easily determine the nature, or trace the analogies of parts; we can discover scientific and uniform characters for the zoological distinctions of species, and we can employ a definite and precise language in the description of these animals. By studying the relations of these solid portions to the soft parts of the animals, we are enabled to decipher the structure and read the history of innumerable past generations of gasteropods, which have left no other traces of their existence in the solid strata of the earth. By observing the changes which the same shell undergoes at different periods of life, and the laws which regulate them, we discover new physiological relations of these unorganised skeletons, we obtain numerous data for completing the history of known species, and important cautions in the establishment of new. These skeletons of the gasteropods form the link of transition from the bivalved shells of the conchifera to the polythalamous univalves of the cephalopods, where this external unorganised form of the skeleton is gradually changed for an internal means of support, composed of organised bones.

The animals of the small but interesting class of *pteropodous* mollusca are organised to swim, by the action of muscular expansions, through the tranquil seas of all latitudes, and, like the floating gasteropods and microscopic crustacea which swarm around them, they are never encumbered with a massive or heavy skeleton. Sometimes, as in the *clios* of the arctic and antarctic seas, there is no trace of external or internal skeleton, and their lengthened, tapering, and naked bodies, with numerous long cephalic tentacula, assimilate these animals to the swimming fish-like form of the naked cephalopods. They are small and delicate animals generally found swimming in myriads near the calm surface of tropical seas, and their skeletons, when present, are always light, thin, pellucid, and of a horny or vitreous texture. So that their delicate structure is ill adapted to encounter an agitated sea, or the dangers of a rocky or shallow shore, and it is only in the vast and deep ocean that their elegant forms and colours and their graceful motions delight the mariner's eye, when the glassy surface of the still sea reflects the rays of the setting sun. They swim by the rapid movement of two fin-like expansions extending from the sides of the anterior part of the body. They are all aquatic and marine, and their branchiæ are sometimes disposed on these wing-like arms, as you see in these specimens of the *clio borealis*, an animal which often swarms in such numbers in the arctic seas, as to colour the surface to a great extent by their presence, and they form a principal article of food for the gigantic cetacea, which abound in these latitudes. In the testaceous or *thecosomatous* pteropods, the shell is external, unilocular, univalve, not twisted or spiral (excepting in limacina), of various forms, and generally capable of containing the whole animal. There is of course no operculum in this class, where the shell itself is sometimes a thin, elastic, horny, or even membranous capsule, and in this respect they agree with many similar shells of the gasteropods, and with the thin, light, calcareous shells of the swimming cephalopods. Covering the soft, transparent, gelatinous body of the *cymbulia* of Peron, you observe a thin, pellucid, concave, and carinated shell (*E**, *b*), covered with minute tubercles. From the

wide aperture of this scaphoid shell, the animal extends its broad, membranous, highly vascular, respiratory fins (*E**, *a*, *a*), by the motions of which it is carried through the sea. Between the bases of the arms the head is seen, with its ten-

tacular lobes (*E*, *e*), its proboscis, and two small points like eyes. The mantle here, and in all the pteropods, is closed above, so that the respiratory organs have an external position. The organs contained within the cavity of the mantle have a structure very closely allied to that of the naked hermaphrodite gasteropods. The shell of the globular *hyalea* terminates in a narrow point below, and has two long hollow conical processes extending downwards from its sides. In the *hyalea tridentata*, the median terminal process is very long and tapering, and the two lateral are remarkably shortened. In the shell of the *Cuvieria columnella* of RANG, there is a partially-formed chamber at the lower closed extremity, and the shell of *cresseis cirynla* has the straight conical form of a belemnite, baculite, orthoceratite, and many other shells of extinct cephalopods.

To-morrow I shall proceed to the skeletons of the highest class of invertebrated animals.

CLINICAL LECTURES
ON
DISEASES OF THE UTERUS AND ITS APPENDAGES;
DELIVERED IN PARIS,
BY M. LISFRANC.

TREATMENT OF DISEASES OF THE UTERUS.

Employment of Cupping-Glasses, Blisters, &c.—The observations which have been made upon local bleeding apply equally to these means of cure; when employed in the acute stage, they are more likely to favour congestion than to bring relief: all similar remedies are subject to the same objection and should never be applied except in the chronic stage, either to dissipate a simple congestion, unaccompanied with pain, or to excite the vital properties of the indurated tissue. For this latter purpose a seton may be drawn through the abdominal parietes, a little inside the anterior-superior spine of the ileum, or a moxa or cautery applied to the lateral and inferior parts of the spinal column: but in some nervous women the general irritation which they produce counterbalances the advantages otherwise resulting from them.

Compression—is an advantageous means, but difficult to manage, and requires a perfect appreciation of its indications. A pessary, *en billoquet*, into which the neck of the uterus descends, and becomes compressed, has been recommended for chronic engorgement of the uterus. But we should be well convinced that there exists no irritation of the vagina, bladder, or uterus, which would be aggravated by the presence of the foreign body. We may lay it down as a general rule, that when any pain exists, compression should be avoided; or if the pessary when applied excites fever and pain, it should be removed at once.

Medicated Drinks, &c.—In the acute stage of uterine affections, we prescribe emollient drinks in abundance: during the chronic stage, decoctions of soap-wort, dock, or scabiosa vulgaris, or the expressed juices of these plants may be used if the digestive organs will bear them. We may also have recourse to iodine in these cases with advantage, to cicuta and other similar preparations; but we should watch over the state of the digestive organs with the greatest care, for frequently there exists, with the disease of the uterus, a gastro-enterite, sometimes latent, or sometimes so pronounced that it diverts the attention of the physician from the principal malady. In these cases resolvents are dangerous remedies. How often have patients labouring under incurable disease, but who might have lived for a long time in tranquillity, fallen victims to active preparations administered by empirics! I have so great a dread of this complication with gastro-enterite, that I do not dare to administer laxatives by the mouth. There is less danger in employing discutient frictions with the hydriodate of potash, mercurial ointment, &c.; but we should always wait for the chronic period, lest the inflammation may be increased. Finally, a word on cicuta. It is employed as a narcotic and discutient, and the extract generally is preferred. But there is no remedy so impure: most apothecaries, in preparing these extracts, carbonize the material and render it useless; I therefore prefer the powder, giving at first a grain, then two after fifteen days, and gradually augmenting the dose to four or five grains. Sometimes it occasions a little pain in the throat and some diarrhœa; on the appearance of these symptoms, it should be suspended at once, and all our care directed to prevent gastro-enterite from being developed.

OF SUB-INFLAMMATION, WITHOUT ENLARGEMENT, OF THE UTERUS.

We are frequently called upon to attend females who experience smart pain in the uterus; standing erect, the least exercise on foot, or in a carriage, fatigues them excessively; coition is always excessively painful; they feel a sensation of smart-

ing, burning pain in the pelvis, as if the womb were on fire; the abdomen is turnid, and there is weight about the flanks and iliac regions. The excretion of feces often causes pain, on account of the efforts it occasions. The woman feels as if she had some foreign body which wanted to escape; however, there is no procidentia, or deviation of the uterus; menstruation is regular, and there is no other discharge; the pain is sometimes remittent, but most often intermittent; if we "touch" the woman in this state, we find the os uteri a little more dilated than is natural, but the volume and consistence of the uterus are not changed. The speculum does not discover any ulceration of the neck, but its introduction, or even that of the finger, causes pain. This affection is often regarded as depending on the peculiar constitution of the female, and is purely nervous; some palliatives perhaps are prescribed, and the disease goes on increasing. But supposing it to be a simple nervous affection, does it the less require treatment? Do we not often see a sanguineous congestion determined in other organs by neuralgic pains? I am inclined to consider this state as a sub-inflammation of the uterus without engorgement, and do not lose an instant in applying the antiphlogistic and narcotic remedies of which I have already spoken.

HYPERTROPHY OF THE UTERUS.

Simple hypertrophy of the uterus gives rise to certain general symptoms which we have already passed in review; but we require other data, which are chiefly furnished by the toucher, to recognise it. Thus, on touching the female, we feel an unnatural degree of heat in the internal surface of the vagina, and at the neck of the uterus, which is always very sensitive, much more so than when in a state of scirrhus, and it gives to the finger the same sensation as when it contains an embryo of four or six weeks. In fact, pregnancy, attracting towards the organ a quantity of the fluids, gives rise to a physiological hypertrophy, which serves as a guide to discover the morbid one.

If we would give by comparison the idea of the sensation which the finger acquires under these circumstances, we should say it resembles that produced by a lipoma, by the mamma of a young female who has died suddenly, or, finally, the sensation given by a body compressible, though resisting and elastic, with something of a spongy feel. The engorgement may exist in the neck and body of the uterus at the same time, or in one of these parts separately, but never isolated, so as to present knots like scirrhus. In all cases the weight of the organ is more or less augmented. Here a very important question presents itself for discussion; the augmented weight of the uterus drags and fatigues the broad ligaments which have lost their elasticity, and are disposed to yield to the weight of the organ.

Hence it follows, that every engorgement, whatever be its nature, is always accompanied by a more or less marked prolapsus of the uterus; and as the latter is the consequence of the former, our remedies should be directed against the engorgement. I can assure you, from experience, that in a vast majority of cases, by so doing, you will restore the uterus to its natural position. I insist the more particularly on this point, and direct your attention to it, because a contrary practice is almost universally followed, and the procidentia alone attended to, being attributed to a weakness or relaxation of the broad ligament. I do not mean to deny that prolapsus may not exist without engorgement, but the case must be extremely rare, for in the great number of diseased affections of the uterus which have fallen under my care, I have not yet met with a single example. Besides, the uterus, even when healthy, is easily displaced during any considerable effort. Thus, when the speculum is fixed and supported by the finger, if we desire the woman to make an effort, the instrument is expelled with force, and the neck of the uterus descends sometimes within an inch of the external orifice. On this account we should be careful, in cases of engorgement, to recommend the woman not to make any effort when she goes to stool, and to employ lavements constantly, lest the procidentia determined at the time may persist.

We are not to confound simple hypertrophy of the uterus with a condition which is far different. This is an extreme softening of the tissue of the organ, which gives way under the pressure of the finger, like a rotten apple; it is no longer firm, elastic, and spongy, but feels like a pultaceous substance, or almost like a fluid, and the tissue is reduced to a brown-red decomposed jelly.

This state of the uterus, which has been called occult cancer, is sometimes accompanied by a superficial ulceration, and sometimes excites singly. The diagnosis is here of the greatest importance, for simple hypertrophy does not require an operation, while occult cancer, rapid in its march and mortal, leaves no other choice than the complete removal of the diseased parts. To the differences already pointed out between these two af-

fections, the following may be added:—Hypertrophy is commonly of recent date; cancer is an older disease. Hypertrophy occupies the neck and frequently the whole body of the uterus, while cancer remains for a long time limited to a portion of the organ. We insist the more on this point of the pathology of the uterus, regarding it entirely new, as the facts by which it is supported have been frequently observed in this amphitheatre, where we have placed before the eyes and in the hands of the class, the anatomical preparations, after amputation of the neck of the uterus for cancer.

Simple hypertrophy is either accompanied by pain or not, hence two indications. In the first case we have recourse to antiphlogistics, absolute rest, emollient lavements almost cold, injections of the same temperature, entire baths, bleeding from the arm, &c., and, above all, perfect repose of the diseased organs. The diet may consist of milk, vegetables, white meats, and fish, always paying regard to the habits and temperament of the patient. This is a simple mode of treatment, but it should be persevered in scrupulously. Affections of the uterus require a longer time to cure than those of any other organ; in the first place, we dare not act during the seven or eight days which precede the menses, nor during the discharge; and in the second, this congestion, though merely physiological, by returning periodically every month, cannot fail to influence in a dangerous manner the permanent morbid congestion. Both patient and surgeon must, therefore, be armed with patience. The time necessary to complete the cure may vary from one to three months, but we should here observe, that the progress of the cure should not be measured by the extent of the pain, for we have often seen the latter increase as the engorgement diminished.

When the hypertrophy exists without pain, but with a little uneasiness and weight in the pelvis, the disease is in a chronic state. Here again we employ general bleeding, cold baths, if the woman can bear them, simple affusions, or medicated ones. In these cases twelve or fifteen leeches, applied to the neck of the uterus, are useful to hasten resolution, and then we may prescribe with advantage moderate exercise, cupping-glasses, affusions on the pelvis, &c. If we suspect the existence of some excoriations, the speculum may be employed without fear; in a word, the treatment, which is antiphlogistic in the acute stage, becomes excitant and revulsive in the chronic: the only thing we have to take care of is, that the excitation do not pass just bounds so as to bring back the acute stage and necessitate the employment of fresh antiphlogistic measures.

OF THE SIMPLE WHITE ENGORGEMENT, AND OF SCIRRHOUS TUMOUR.

We unite these two diseases under the same head, because the treatment is the same, and the difference of diagnosis affects only our prognosis of the disease. In both cases, the finger introduced into the vagina recognises an increase of volume in the uterus, either in totality, in the neck, or in the body only. The size may be enormously increased; pain may be absent in both cases, or show itself equally lancinating, so that the differential characters are confined to the following:—

1st. Simple engorgement is less hard, and presents an uniform surface to the finger, while a scirrhous tumour is irregular and rough.

2nd. In scirrhus, the mucous membrane covering the neck of the uterus is of a dull-white colour, which I have never observed in simple engorgement.

3rd. Scirrhus develops itself more slowly: thus, when an engorgement is only of one or two months' date, especially if it have succeeded to an abortion, to a sudden suppression of the menses, &c., we are sure it is not of a scirrhous nature.

4th. Finally, simple engorgement requires only a treatment of a month or six weeks, whilst under the best care scirrhus will require a much longer period. The treatment varies according as the affection is acute, that is, accompanied with pain, smarting, and heat; or as it has passed to the chronic stage. In the first case we employ antiphlogistics, in the second resolvents, either internally or externally. Finally, if the disease be very obstinate, we have recourse to setons, moxa, or even the actual cautery.

But you may ask me, Gentlemen, if scirrhus be really capable of cure. I have not the least doubt of it. Do not we see every day scirrhous enlargements of the mamma and lymphatic ganglia give way? and the case is more frequent when the uterus is affected. Without doubt we are not to give the name of scirrhus to every hard unequal tumour, which causes pain merely by its dragging and pressure on the neighbouring parts, for the same indurations and inequalities, accompanied by vegetations and tubercles, are seen in certain ulcerations of legs in old men, without giving any idea of cancer, and why not the same with respect to the uterus? I partook of the same error as others for many years, and was only corrected by experience. About six years ago we gave

up two females who presented all the characters of a scirrhous affection of the uterus; but these very women are now perfectly well, and what is more remarkable, have become well by the help of nature alone. Simple white engorgement may be complicated, as well as scirrhus with ulcerations and vegetations; hence, even when the diagnosis is obscure, we should not be too much discouraged. I have treated two cases in which all these symptoms existed, with an enormous engorgement of the uterus, and both became, finally, perfectly cured.

CLINICAL LECTURE

BY

MR. BRODIE,

Delivered at St. George's Hospital.

INFLAMMATION AND ABSCESS OF THE TIBIA.

Henry Esk, aged 17, was admitted into Oxford Ward on the 30th of October, 1833, with diseased tibia of the left leg. On examination, the skin near the ankle-joint was found to be red, rough, and suffused on its surface, and very painful on pressure, but the fibula and ankle-joint were not at all affected. Eighteen months ago he fell from a height, and came to the ground with the left foot foremost, by which it was everted, became swollen and painful. These symptoms, however, subsided in two or three weeks; but six months since he felt pain in the tibia, and was then unable to walk about or to use the limb. At that time he was an out-patient of the hospital, and took calomel and opium, had his mouth and gums slightly affected, and experienced some relief from the pain in the leg, but it returned again on the medicine being discontinued. On his admission to the hospital the enlargement of the lower portion of the tibia had increased, and the pain in it was sharp and severe, like that of the toothach.

Now here, Gentlemen, is a case in which the lower end of the tibia is enlarged, and that, judging from the symptoms, I should suppose to result from chronic inflammation of the bone, an affection commonly met with in the bones of the lower extremities. It is one which will generally yield to constitutional treatment; but you will not succeed in relieving it by leeching or blistering. *Calomel* and *Opium*, and *Sarsaparilla*, are the internal remedies, which, by affecting the constitution, most readily relieve this disease. *Mezereon*, *Iodine*, and other medicines, have also been given internally, and with a certain degree of success in some cases. I ordered this boy *Calomel* and *Opium* because I thought them the best thing for him; but the medicine was given under unfavourable circumstances. The boy was going about as usual, and did not take proper care of himself, therefore the medicine did not benefit him so much as it would otherwise have done. When he was admitted, I was almost led to believe from his symptoms that the chronic inflammation of the bone had proceeded to the formation of abscess in the centre of the bone, and I began to doubt the utility of internal remedies in his case. However, he had not taken the *sarsaparilla*, and I, therefore, determined to give that remedy a trial. I accordingly ordered him half a pint of the *Compound Decoction* of *Sarsaparilla*, with three drams of the *Extract of Sarsaparilla* dissolved therein, every day. When you want the sarsaparilla to act on any one particular organ, through the medium of the constitution, you must give it in such large doses as that.

I ordered him this medicine on the 1st of November, and on the 8th the report in my book states that he is better in many respects, but that there is more redness and vesication of the external skin over the tibia, for which the *Chalk Ointment* was ordered to be applied on the surface. On the 13th he complained of headach and thirst, and the sarsaparilla was ordered to be discontinued, when he took a dose of *Calomel* and *Senna*, after which the sarsaparilla was again proceeded with. On the 25th the report states that the leg is less painful, but that the redness has extended farther over the surface. I then also learnt, that he had a disposition to psoriasis over other parts of his body, and I, therefore, ordered one dram and a half of the *Liquor Potassæ*, to be added to the sarsaparilla. The last report is up to the 1st of December, when the leg was less painful, and the swelling of the tibia had decreased.

Judging from the effect of the sarsaparilla in this case, I am inclined to hope that the affection is nothing more than a chronic inflammation of the bone, with increased deposit of bony matter, unattended by the formation of abscess. But the latter injury is still possible. You will be inclined, perhaps, to ask me why I think it possible that there may be abscess, and I cannot better answer the question than by relating to you a case which first drew my attention particularly to this affection. Here is the tibia belonging to the case; it has been preserved

as a preparation. The particulars are these: A gentleman who lived in the city had had an affection of the tibia for a dozen years. He had, at various times, consulted all the surgeons in the city, and everything that medicine could effect had been done for him without benefit. He then came to consult me. I at first ordered him calomel and opium, but that did him no good. He continued in the same state for some time, suffering most intense pain,—not for hours only, but sometimes for days together.

Finding that no means which were employed proved of any service, I recommended amputation of the leg. He acceded to the proposal, and I removed the limb. On making a longitudinal section of the part, as is here done, I discovered the cause of all his pain and suffering, and had I but been aware of that cause, I might have applied the crown of the trephine to the lower part of the tibia, and have relieved him. He recovered very well after the operation. This case made a great impression on my mind, and I soon afterwards met with a similar case, of eighteen years standing, to which I applied the crown of the trephine. After piercing to some depth in the tibia, I arrived at a little cavity in the bone, containing about two drams of pus. On opening this, the patient shrieked, and complained of a very severe pain, resembling that of a nervous toothach, only more intense. I dressed the wound to the bottom with dry lint, and it granulated, filled up, and healed very kindly.

The resemblance of Esk's case to these leads me to believe that the disease is the same. In the other cases the patients would sometimes be better and quite free from pain and suffering, as this boy has been. But we must remember that in the hospital he is kept quiet and free from exercise, and therefore he may still have abscess in the bone without symptoms thereof.

The only bones in the body in which the trephine can be easily applied, are the bones of the skull and the tibia, because these are only covered by a thin skin and periosteum; whereas in such bones as the femur and humerus you have to cut through deep muscles and fascia,—a process which renders the operation a dangerous one.

Acute inflammation of the tibia may occur as well as chronic inflammation of that bone, and we know not whether it commences in the bone, the medullary membrane, or the periosteum, as, after death, or an operation, the whole mass appears amalgamated into one diseased structure. Sometimes, at an early period of the disease, the acute inflammation may be subdued by medicine. The pain and fever abate, the œdema of the leg subsides, and the periosteum becomes thinner; but the leg appears larger, owing to ossific portions of bone being deposited on the periosteum during the period of acute inflammation. This is certainly an inconvenience but not a permanent one, for, in the course of one or two years, the extra deposit of bone becomes absorbed, and the tibia is reduced to its natural size. In this manner, then, the acute inflammation may terminate. Sometimes, however, the inflammation of the medullary membrane proceeds to the formation of pus, and ulceration and abscess advance through the shell of the old and new bone. After a time these burst and discharge matter. Sinuses will then form in different parts, leading down to a central ulcerated cavity in the bone, which may be dead. Cases, however, sometimes occur, in which there is no dead bone, and then granulations spring up and close the sinuses, and the case terminates without necessity for an operation. It may be, however, that an operation is required in cases where there is not a free discharge for the matter. Cut down to the periosteum, peel it off with your fingers, and apply the crown of the trephine near one of the sinuses. If you introduce a bent probe, you will frequently find a longitudinal sinus running in the direction of the bone. This you must lay open, and dress it to the bottom with dry lint. Granulations will then spring up and it will heal. There may be some slight exfoliation of bone afterwards. Sometimes, where you can feel no dead bone, you may detect a small portion in the sinus, sufficient to keep up the irritation and inflammation of the bone.

There are, however, cases which occur more commonly than any of those of which I have spoken, and in which the trephine may be used with great advantage. You know that a part which is inflamed may lose its vitality, and that bone will die from inflammation sooner than muscle, because it has a less portion of vitality. Warts may form on the glans penis, having a smaller share of vitality than the glans on which they grow. Savine powder will shrivel up and destroy those warts, without affecting the glans on which they are situated. Thus, a large portion of the tibia may die from inflammation, but the periosteum covering it may remain unaffected, because it possesses a larger share of vitality. New bone may be deposited on the periosteum, enclosing the old dead body of the tibia; and in a case like this, after the inflammation has subsided, the tibia is larger than natural. I remember the time when, in all such

cases as these, amputation was performed, but now we never amputate in them. We cut down over the tibia, and separate the periosteum with the fingers. And why are we so careful of the periosteum? Because from it new bone will be generated to take the place of the old and new bone which we remove by the operation. If you operate at an early period of the disease, you will find the new bone softer in texture than natural, and you may break it down with a chisel, and, in time, this new bone becomes quite as hard and firm in texture as in the natural state. If the portion of dead bone to be removed be small in size, you may remove it entirely in one piece. If it be large, your better plan will be to divide it in the middle, and remove it in two portions, drawing the lower one up, and the upper one down, as you remove them. Inflammation of the structure of bone generally stops at the epiphysis, so that in the leg it rarely extends to the knee or ankle-joints. With respect to the time for performing the operation, you should allow sufficient time to elapse for the old bone to separate from the new, and the new bone to become sufficiently hard and compact in texture to allow of its supporting the body, or otherwise it may bend. You will generally find a period of three months sufficient for this.

ANATOMY AND PHYSIOLOGY.

LECTURES

ILLUSTRATED BY THE

HUNTERIAN PREPARATIONS

IN THE MUSEUM OF THE ROYAL COLLEGE OF SURGEONS, LONDON.

Delivered at the College in 1833, *by*

SIR CHARLES BELL, K.G.H., F.R.S.

LECTURE III.

ADAPTATION OF THE FORMS OF ANIMALS TO THEIR WANTS AND PURPOSES.

GENTLEMEN, we shall not do honour to Mr. HUNTER, or credit to ourselves, unless we understand the manner in which he took his notes and formed his collection. He felt that life was short, and he took such slight notes respecting the nature of the animal as a naturalist would make. He then put up his preparation, and having done that, he considered that the best notes that he could have were thus preserved. Accordingly, you must endeavour to consult those notes. They constitute, as I ventured to say to you before, a perfect language, an universal language.

Now, I find that there are on the table, and also on the shelves, preparations explaining the hard materials of animals, bone, cartilage, horn, and shells, and forming such a series as obviously to imply what was in HUNTER'S mind when he was at work with them. Thus directed, I go into the museum, and there find such articles as are illustrative of the principles betokened in them, but all of which cannot be put upon this table.

I beg you to notice that Mr. HUNTER is said, and I believe correctly, to have taught us to think. At all events he has given us the materials for thinking; and I have been exceedingly anxious to place before you those materials, and offer those observations on them which they naturally and obviously demand. The principle I have already assumed is this,—that taking for example all the vertebræ, taking all the animals which have a true skeleton,—observing all their characters, observing the whole of the mammalia, birds, reptiles, and fishes, their orders and genera,—you find that the skeleton is a type by which the habits and internal structure of the animal may be discovered. It is for this purpose that I beg your attention to the skeletons before us. I intend to go over them and, as far as I am able, show you their varieties and the reasons of those varieties.

I am tempted to think that the first thing which catches your eye is the skeleton of a kangaroo. Why is the skeleton of that animal so singularly at variance with the others? We do not know, and I apprehend the reason is, that we know so little of the habits of the animal. But although I cannot tell you the reason of the external conformation of the kangaroo, or rather, I would say, its general configuration, yet I will make one or two observations to show that there is a correspondence between the skeleton, the general form of the animal, and so much of its functions as we are acquainted with.

There is in this creature an enormously large proportion of the lower extremities. You see nothing like it, I suspect, in contemplating the skeleton of a man, or in comparing it with that of a monkey. The monkey is not intended to stand erect, as is obvious from the diminutive size of the posterior extremities, compared with those of man. The thigh-bone and tibia of man, as well as the pelvis, indicate the power of the human muscles, and his capacity to stand upright; but in the kangaroo the lower extremities are of such an enormous size, that we judge it to stand erect. We

shall presently see, however, that there is a perfect correspondence between these and the upper parts of the body,—that although the upper part seems to be the skeleton of a small animal placed on the large posterior portions of a large one, yet that the upper parts are really free from that objection. The animal has a clavicle, and, consequently, an extent of motion which indicates great freedom and power in the upper extremities. Though this is an innocent animal, having no power in the teeth, yet nature has not left it without the means of defence, for with its paws it can hug like the bear, and when hunted and attacked even by the most powerful dog, it seizes the dog, hugs it violently, and then, with the sharp points of its lower extremities, digs into the abdomen of the canine animal, and tears it to pieces.

To pass to the internal functions of the kangaroo. Permit me to submit to you the following piece of reasoning with regard to the production of its offspring, which is very remarkable. Most of you know full well that in animals having an erect posture of the body, there is a complex pelvis, and in order that the offspring may pass through the pelvis, a most accurate degree of regard is had to the form of the offspring, and the shape and dimensions of the pelvic cavity. Looking, then, to the enormous lower extremities of the kangaroo, and the pelvis, you see that the fœtus could not, even in the youngest state, accommodate itself to the condition of the pelvis. It never could have the anterior part similar to the posterior, and therefore in passing through the intricate pelvis there would be both danger and difficulty. And how does nature remove the difficulty? Why, by the most extraordinary means, as it appears to me; for instead of the young animal remaining in the womb during the full period of gestation, the mother is, by the most extraordinary and incomprehensible means, delivered at an early period,—so early, indeed, that the infant has yet assumed no form, or, at least, hardly any form, and is found appended to the teats, which constitute, as it were, an outward womb, or in the sac which is external to them. The first remarkable thing that follows is, that in feeding the young, instead of the nourishment coming from the aorta, it comes from the epigastrium, and arrives at the artery of the great lower extremities. Thus you find that instead of a difficult parturition, the young are delivered at so early a period that there can be no difficulty in the passage through the pelvis; and till the period of gestation is passed, the animal, being carried external to the pelvis, is contained within the outward bag, and there is nourished, as in other mammiferous animals, by milk, and the provision by which the animal is brought from the internal uterus, as it were, to the external, which is appended to the nipple, is very curious, and the nipple presses the milk into the mouths of the young at so early a period, that if it did not so act the little animal would starve, for one cannot imagine that the little creature is able to suck of itself. This is a singular instance of a relation established between the general external form of the animal, or the form of the pelvis, and some of the principles of its internal functions.

In considering the skeletons of animals, I hope you will always fill up the process of inductive reasoning in the manner which has been so beautifully pointed out by Baron Cuvier, by which, in studying the form and character of an animal, we argue from point to point of its structure.

I shall next proceed, Gentlemen, to make a few remarks on the skeleton of the elephant. The head on the table is one of the smallest specimens; the largest could hardly be brought down for your inspection. Why is the head so large? Because this great animal is gramnivorous, and must have teeth like a mill-stone,—as hard and as peculiar; and possessing such teeth it must have jaws of a proportionate size, which, again, must have proportionate muscles, and these also a proportionate skull, from which hangs a proboscis. Altogether the weight of this mass must be enormous. Now, if you consider the difference between sustaining a weight upon your shoulders and at the extremity of your hand, you will see at once that if this immense weight had been attached to a long neck, the weight of the head would have been increased, for the neck would then have acted with the power of a lever, and the whole mass would have become too great for the anterior extremities. Jockeys who know the properties of a horse, find that these are entirely changed by the attachment even of a small head to a *long* neck. You may imagine that if such an apparently trifling peculiarity produces a tendency to foundering in the feet of the horse, such a weight as the elephant's head appended to a long neck must have an amazing effect upon the anterior extremities of that animal. Now the elephant's head is attached to its body by no new form of skeleton, but by the contraction and diminution of the vertebræ of the neck, to such an extent that you scarcely perceive that the animal has a neck. The head, therefore, is placed nearly perpendicularly upon the anterior limbs. What is the result of that proximity? Why, that the head cannot

reach the ground, and that being the case (and if it did reach the ground it could not feed) the animal must have a trunk. Here, then, you have the reason why a trunk is appended to the head of this enormous animal,—forming, as it were, a hand, by which it may drink and feed.

There is another circumstance worthy of your consideration in this matter, and that is the existence of the hole which gives a passage to a branch of the fifth pair of nerves. You see how a minute attention to anatomy enables you to proceed in this study. The enormous trunk is muscular, highly muscular, highly sensitive. The nerve, then, which has to supply that trunk must be large. You know that every hole in the temporal bone indicates the presence of minute nerves, and if these were wanting the nerves would be wanting. and an important function would be cut off. The hole, however, not only indicates the presence of the nerve, but its size, and by the size you estimate the part to which it is going. If the animal then be to have limbs to move the body, and if it have to carry this head, it must have a trunk. With regard to the mastodon, which is an animal *incognitum*, an animal which is lost to modern generations, and of which we possess only certain portions, what sort of an animal must it have been if estimated merely from the size of the leg? When you compare the length of its leg with that of an elephant, and examine its teeth, you perceive that it must have had an enormous head, and if our views be consistent, it must have had a trunk. If you could only obtain a small portion of the frontal bone with the passage for the fifth pair, the size of that hole would sufficiently inform you whether there had existed such a nerve as could only be wanted for a long trunk.

But to return to the elephant. I before ventured to suggest that its bones were built upon the principle of the Egyptian plan of architecture. They are of enormous bulk. Now while you observe the enormous bulk of the bones, you cannot but observe also the manner in which they are placed on each other. They are perpendicular to each other, a circumstance which you meet with in no other animal. If you were to compare the bone of the elephant with, for example, the bones of the horse, the elk, or any animal of great lightness and speed, you would find the two sets quite different. The bones in the latter animals are not perpendicular to each other. But in the elephant the weight is so enormous, that it seems not only that the bones must cling together, but that they must be built in an exactly perpendicular direction.

If you look at any of the quadrupeds,—the horse, the ass, the zebra, or any of the club-footed ruminating animals,—you find a very different principle prevail. The scapula lies within, the humerus falls obliquely, and, consequently, it comes down upon a spring. The loins, the back, and the hind extremities, are the force with which these animals are carried forwards, but the anterior and posterior extremities are proportionate; and if you have a force in an animal by which it can spring to a great height, an elastic apparatus is at the same time provided, by which the animal can come to the ground again without experiencing a shock.

Such is the character of the position of the bones in these animals, as compared with those of the enormous elephant; and I might also observe, that the class of timid animals, by having their bones arranged in an oblique position, are prepared to start off at a moment's notice. Timidity of character in the animal is not merely marked in the eye or the ear, but in the capacity to start away at once. You could not, Gentlemen, do so yourselves. You must bend the knee before you can bring the muscles into action. Nature, however, has prepared fearful animals to spring off the instant an alarm is given, without any state of preparation.

There is a skeleton of a hippopotamus in the museum, but it appears as though it had been put up by a showman and not by an anatomist. This remark I make on the very principle which I have submitted to your consideration. There is no proportion between the head, the neck, and the extremities. According to scientific principles, or, rather, with a view to follow the correctness of nature, that skeleton ought to be taken down and put up again. Can there be anything so extraordinary in the way of contrast as the elephant and the giraffe? There is not a more beautiful example of the accordance of all the parts of a skeleton to one great purpose than is presented to us in the giraffe. The object of nature is, in that animal, to sustain the neck during its erection towards a high point to procure its food, and I beg you to notice how that process is effected. The head is particularly small. The elongated neck never could carry a large head. You perceive at once, therefore, the reason of the remarkably small head. But small as is the head of the giraffe, and long and slender as is the neck, it is of a great weight, and the weight is thrown from off the anterior extremities. As to the horse, its head and neck protrude, and the whole weight of this fore-part comes on the fore-feet; but in the giraffe, from the oblique position of the spine, and the shortness of

the hind-feet, an equal weight is placed on all the four feet. Another curious circumstance is this,—that there are three ribs of enormous strength under the scapula of the giraffe. Those ribs are proportioned with a view to support the enormous column of the neck. The posterior ribs are different. Why? Because their function is merely that of respiration. They are not destined to bear any part of this enormous column. What more, then, is wanting to enable this animal to reach the highest tree? One thing more, and that is, a peculiar tongue,—a tongue capable of great elongation, one which will start forth yet farther than the neck, and which it can wrap round the tree, and so bring down the food.

But I am, perhaps, leaving out for too long a time, as explanatory of the general condition of the skeleton, that of the bird. In the bird you have the best possible instruments of life. What is the object of the animal's powers? Why, first, to make the bird specifically lighter, and then to concentrate all its power in the wings. I beg you to notice how these phenomena are produced. In the first place, air is admitted into all the interior of the bones. Communications are found betwixt the vesicles and air-cells within and every bone. The bone of the wing, powerful as it is, is not nearly so heavy as a bone of corresponding size in a quadruped. The light marrow, which is the lightest of all materials, is diminished, and air is admitted in order that the hard and resisting material may take that form which, on mechanical principles, you know to be most secure against transverse fracture. This is the first admirable thing we observe. The great extent of bone and processes necessary for the lodgement, attachment, and play of the muscles, is procured at no expense of weight. The next admirable thing is the change in the mode of respiration, on which I must not touch, or I should make too great a digression from the proper subject of the lecture. But the respiration is so altered, that the whole interior, the thorax, and the abdomen, have air-cells within, admitting a proportionate expansion of their substance, and causing a proportionate diminution of the specific weight of the whole bird.

But even this is not all. The sternum is elongated, it acquires an enormous size, and almost all the muscular substance is concentrated and lodged there, that it may play with, and add force to, the wings. Elsewhere there is a keel, the great projecting spine of the breast-bone; and according to the form of the keel, you may know the quality or the flight of the bird, —whether it be a domesticated animal, or one which remains through the season, or is a migrating bird. With regard to the trachea, there is a great difference between the tame and the wild swan. In the one it goes directly to the lungs, and in the other it is coiled up in the sternum. When the trachea is coiled up within the sternum, you would at first suppose that it must be some instrument of sound—that it is connected with the cry or note of the animal. Not at all so. Mr. Yarrell tells us that there is hardly any voice when the trachea is thus confolded within the sternum. It is obviously so constructed to enlarge the bone, to give lodgement to the pectoral muscles, and strength to the wings. But this enlargement is not confined to the sternum. The back rises very high, and the purpose of that is to afford security and lodgement for those muscles which raise the wings, as well as those which depress the wings. The same object is contemplated in the character of the whole vertebræ of the back. They are, as it were, fixed together; they are consolidated; and in the consolidation of the whole spine, you see a firm attachment for the muscles. There is obviously a provision in this case different from that comprised in the mobility of the spine in other cases.

Again, Gentlemen, if this be the case, if the trunk of the bird be thus concentrated into a mere work of firm carpentry for the attachment of muscles, how is it moved? How is it to balance itself during walking and flying? The answer brings you to admire the length of the vertebræ of the tail. Since the wings are thus employed in flight, there is another instrument, like the hand, which sustains the balance of the creature in walking and in flight,—a rudder-like projection, in the vertebræ of the tail.

Having detained you thus long on the general form and body of the skeleton, let us for a moment advert to the extremities. There is before me a three-toed sloth. This is a much-abused animal, and the abuse comes from no less an authority than Buffon—nay, even from Cuvier himself. It comes however out of place; the animal was seen out of its proper sphere and home. When this creature is on the ground, these authorities are almost entitled to speak of it as a blot in nature,—a failure. In the first place the animal is clothed with hair, like, as it is described, dry grass, and then its long arms are brought forward, without the power of progression, unless by accident its great claws get hold of some irregularity of the surface. It is said that the cry of this creature is so miserable, that the tiger even turns away from it in pity.

Now Buffon says, that this animal is obviously a failure in creation, and Cuvier tells you, much in the same strain, that if the animal be judged by its structure, it must be considered as an inhabitant of the ancient world,—as one that is not suited to this.

Now the fact is, that when this creature is in its proper place, when once its long claws get hold of the rough bark of a tree, it is readily enabled to progress forwards. The claws are, in fact, hooks; there is a sort of nail in the carpus; there is a condensation, an extraordinary firmness in the claw, which, in truth, forms such a hook as a man sometimes attaches to his wrist, when he has lost his hand. Now these hooks are admirable appendages, when the animal has once got to a tree. It puts its arms over its head, and rises with great rapidity; and it is said, that when the wind blows hard, and the tree stoops, and the branches of the tree join to those of the neighbouring trees, tree to tree, that this animal is then upon the high march. In order to understand the variety, the extraordinary variety, which is presented to us in the extremities of animals, we must not contemplate them on the principle, that because they are remote from the centre, they are liable to change, but on the fact that there is a new adaptation of the extremity required; and, for reasons which I have before assigned, there must necessarily be a greater variety in the adaptation of the extremities of animals than in their bodies. When you consider the immense forests which exist abroad, the vast extent of green turf below, the great expanse of brilliant firmament in the canopy above, the various divisions, again, of these, and how many animals reside there, you find the necessity for structure being adapted according to the varieties of inanimate nature there existing. One animal eats fruit, another eats bark, another lives on insects under the bark,—the squirrel runs up and down the boughs of the tree, the long-armed monkey swings from one extremity of a branch to another, sometimes hanging by one leg, sometimes by the other, and sometimes by the tail, and so on, until at last you find the three-toed sloth suspended at a secure distance from beasts of prey below, and nearer his food, by means of extremities, which consist of hooks rather than of claws.

Nothing can be more absurd than to judge of the tardigrade animals by our senses, for there is not only a variety in their instruments, but in their instincts. Take, for example, the chameleon, or the spider. Some animals are distinguished by vast swiftness of motion, while, in others, the motion is slow. If, for example, you watch a swallow, or a fly-catcher, pursuing its prey, you do not see the bird catch the fly, though you hear the snap, for its motion is so rapid, that you cannot witness the operation itself. Contrast this with the act of the chameleon. You know that the latter takes its colour from the surrounding objects; it looks very much like the tree; it scarcely opens its eye, and when an insect approaches which is to be its prey, it puts forth its tongue as slowly as the hand of a watch moves, and so secure is it of its object, that the least touch of its glutinous tongue is sufficient to ensure the possession of its victim. It is not reasonable to judge of these tardigrade animals by their slow motion, for they have a disposition which bears a relation to their configuration and instruments. Indeed, you may say that man imitates them, and, by a show of reason, vindicates, as it were, the instinct of the lower animal. The Indian thief, perfectly naked, and dark in colour, oils his body, and with nothing about him but a dagger tied to his breast, steals under the canvass of a tent, moving with a motion so steady that even he who is sitting to watch is not alarmed. There is just as good reason for estimating the whole human race by the slow proceedings of this one man, as in the instance to which I have referred, and we cannot therefore depend merely on our senses in contemplating the motions of animals. The slow motion of the chameleon is a more secure one for obtaining food than the most lively action.

As we are upon the subject of the extremities, I will venture one explanation more. There is nothing more curious, as connected with the habits of an animal, than the condition of the toes, such as we may observe in contrasting the dog, the wolf, and all animals of that class, with the feline tribe. You are all aware that the latter have fine sharp hooks, and it is said that the hook is held back by an elastic ligament. It is very true that there is an elastic ligament, and that it so turns up the part that the sharp point does not touch the ground. But does it not appear to you that some further explanation is wanting? It occurred to me, that if the hook, the claw, were brought down by the action of the flexor muscle, it was very extraordinary that when the lion made its spring, its claws did not sink down and lay hold of the ground. On dissecting the part, then, with a view to discover the truth of this, I found that the retention might be explained by the very peculiar position and size of the bones, as exhibited in this diagram. There is nothing more curious

than the manner in which the entire strength of the phalanges of the toes is given to one bone, so that the others are rendered useless, and are drawn out of the way, as in the horse. In the horse all those bones which answer to the fingers are consolidated into one bone, than which nothing is more admirable. Our professor of veterinary surgery has told me repeatedly, that long as he has contemplated this formation, he never demonstrates these parts without finding some new beauty in the quality of elasticity, for the prevention of concussion. The horse, too, has not only such a toe as is suited to his club-foot, but the part corresponds with the whole configuration and disposition of the animal. You may see a remarkable example of adaptation in comparing the foot of the horse with that of the cow. There is no preparation before me illustrating this, but you must all have noticed how difficult it is for a horse to draw his feet out of soft ground. His round and hollow hoof necessarily causes what is called "suction." Soft soil, then, is not his place, whereas you see that cattle, when by the water side for instance, have no difficulty in drawing up their feet out of the most freely-yielding ground; for in the first place, the foot expands as it descends, and, secondly, it is somewhat conical, and, therefore, can be easily withdrawn. In this familiar circumstance, you cannot but admire the adaptation of the extremities to the habits of the animal.

But we must now seek our illustrations a little farther off. I should perhaps carry you down, had I time, through the chelonian order, and show you (as in the case of the tortoise) the manner in which the scapula is formed, and singularly altered to suit certain purposes. You may in the tortise recognise at once all the parts of the arm, the humerus, the radius, the ulna, the carpus, and the phalanges. If we had time to enter upon these we should be carried on through the lower classes of animals down to those of a former condition of the world. In the ichthyosaurus and the pletiosaurus you may recognise the scapula, the humerus, the radius, the ulna, the carpus, and an extraordinary extension of the phalanges. I know not what the naturalist says to this, who thinks that as we descend the elements of complicated structure are withdrawn, for in the ichthyosaurus and the pletiosaurus the very extremities seem to multiply, in an extraordinary manner, their proportions of bone. I have now, however, but a short time left to-day, and therefore must hasten to observe that it appears that those animals which have disappeared as living creatures, inhabited a warmer quarter of the world than our own. They are described as lying in the limestone, many fathoms beneath the chalk-beds of England. In short, geologists, who have made beautiful observations and great discoveries in natural history, and whose minds and the accuracy of whose reasoning and conception we can estimate, have told us that these were inhabitants of an age of the world which existed long before the series of changes which have prepared the surface of the earth for the abode of man. Now, we find not only a particular type, as it were, running through all those creatures which now inhabit the globe, but in the strata which lie far under the present surface, —which had existence in truly remote periods, when one day was as a thousand years and a thousand years as one day. There have been discovered remains of now-extinct animals, in whose limbs we recognise the same parts with which we are familiar in the skeleton of man. What is the conclusion? Why, I should say that the same principle was in operation during their life as there is now,—the same system of parts,—and that the mind of the Creator contemplated in their creation not only the production of an infinite variety of animals, but also an adaptation of the animal's form to the condition of the globe itself at the time the animal was a living inhabitant of the earth, variously adapting, through a succession of changes, all the animals to the condition which resulted when the mountains were raised as they now stand. From the change of surface there necessarily arose a variation of temperature in the atmosphere, in consequence of which there came winds, blowing the mists from the lower grounds, and elevating the clouds to the tops and sides of mountains, whence rushed down rivers, breaking up the higher grounds, and bringing them down to the lower areas, making them prolific, and, in short, presenting a scene suitable to the industry, ingenuity, and enjoyment of man. I do not conceive that I am drawing an extravagant conclusion when I say, that all this was contemplated and effected during the course which nature has hitherto run.

Notwithstanding the numerous examples I have presented to your notice, my demonstrations are not yet exhausted. I intend to select another,—that of the human hand. It is fitting that we should conclude these views by considering what is peculiar in that member. Allow me to say that I am as proud of my thumb as I dare say some of you are of the calf of your leg; for it is the thumb which dis-

tinguishes the hand of man. It is the number of muscles which gives play to the thumb, that gives the hand its dexterity. The thumb you know is equal in strength to all the fingers. In observing the grasp which the thumb and fingers are capable of making, you at once see the strength of the muscles of the arm. The pad of the thumb is a provision of safety to the hand itself. How could a sailor hold a rope and raise himself from the ground, were not the hand worked, just, for instance, as the foot of the chameleon is worked? The chameleon has a fine soft cushion in its foot, and there is a cushion within the human hand, and another provision, indeed, which runs across it, and adds proportionately to its power of grasping, causing the edge which makes that hollow which induced Diogenes to throw away his cup as useless when he went for water. Even in the extremities you find how careful nature is to give due support, and had I time at present I could show you how beautifully these pads are covered with skin, and how curiously they are provided with nerves for the sensibility of touch. There is, for instance, as much to admire in the manner in which the nerves of touch lie along the points of the fingers, as there is in the distribution of the nerves of vision itself. In short, Gentlemen, the hand of man corresponds with his mind. It is not the *source* of ingenuity, but it corresponds with his ingenuity, and executes its purpose, and the ingenuity of all the animals we have considered, corresponds with the form of their external organs.

Considerations sur le Cystocele Vaginal, ou sur la Hernie de la Vessie Urinaire sortant par le Vagin; Description d'un Nouveau Pessaire pour guerir cette Maladie, &c. Par le Docteur ROGNETTA. Paris, 1833.

THIS little *brouchure* contains a good deal of interesting matter on the subject of vaginal cystocele, and does much credit to the research of the author, who, by-the-by, is one of the very few French surgeons who have any knowledge whatever of English works or English medical literature. Most ridiculous, and at the same time most amazing, are the blunders (even of professors of the school of medicine of Paris) which are made in that capital, whenever the writings of English practitioners are alluded to. The French commentator confounds names in the most ignorant and laughable manner; and the doctrines of English surgeons and physiologists of the last century are constantly attributed by him in round terms to French or German writers of the present. From this reproach M. Rognetta is entirely free. Indeed he has more than once pointed out in the French periodicals, ludicrous mistakes and peccadilloes of this kind. His good offices and intelligence on such occasions dispose us to take an early notice of his labours in the work before us, which is well worthy of attention on this side the water.

He commences by remarking, that vaginal cystocele is a disease very little known. Writers have, indeed, described, methodically, both perineal and vaginal cystocele, but as none of them had ever dissected on the dead body this species of tumour, the mechanism of its formation was completely unknown to them. The only good pathological description we possess is that of Burns, in Sir A. Cooper's work on Hernia. The author has also frequently produced cystocele artificially, and observed the changes effected by the descent of the bladder, and he has studied the disease with great attention in the living body.

The case which gave rise to the present observations of the author, was that of Madame Moreau, rue St. Honore 275. A few years after the birth of her fourth child, Madame M. began to experience frequent desire to urinate. Afterwards pain in the loins came on with a dragging sensation in the hypogastric region. The patient came to Paris, and was there at first treated as being in the critical age. Of the surgeons who saw her next, some pronounced the disease to be hemorrhoids at the neck of the bladder; others an encysted stone; and others, in fine, imagined that the uterus contained a large calculus. After seven months of extreme suffering, the patient presented herself to the author in the following state:—Pressing desire to urinate every moment, with almost absolute impossibility of passing a drop; painful dragging sensation in the epigastric region, extending to the rest of the abdomen and loins; constitutional derangement; want of sleep from constant

necessity of making water, and excessive emaciation. Although the impossibility of making water, and the painful sensation of dragging in the epigastric region, clearly indicated some serious derangement of the bladder and digestive tube, yet the cachectic appearance of the patient, and the incessant pain about the loins, gave rise to the suspicion of some organic disease of the uterus. The woman was immediately submitted to the toucher, and the finger in penetrating into the vagina, discovered a soft fleshy body blocking up its entrance, but on being pushed further on, discovered the neck of the organ perfectly healthy. The uterus was affected with prolapsus in the second degree. Ocular examination of the entrance of the vagina showed a tumour about the size of the fist, smooth, of a rosy colour, projecting between the great labia, and completely closing the orifice of the vulva. This tumour was fluctuating to the touch, and, when pressed upon, gave rise to the desire of making water. It could be partly reduced with the hand, and the epigastric region was remarkably depressed, instead of presenting the elevation generally noticed in cases of retention of urine. On attempting to pass the catheter, it was found that the instrument could not be introduced, that the meatus urinarius was directed upwards, and the canal of the urethra was displaced to a very high degree. A fresh attempt was made with a male catheter, extremely curved, and a great quantity of muddy urine was drawn off from the tumour, which contracted and became wrinkled as the fluid was discharged. But as the bladder again became filled with urine, the tumour again recovered its original size, and projected, as before, between the labia.

From this assemblage of symptoms it was easy to decide that the woman was affected with a vaginal cystocele, and it was probable, from the obstinate constipation, frequent desire to vomit, &c., that some portion of intestine was engaged in the sac or cavity left by the displaced bladder. The indications were as clear as the symptoms, viz., to draw off the urine, reduce the displaced organs, and retain them in their natural position. For this purpose various kinds of pessaries were employed, but to no effect; bandages were equally inefficacious; finally, a small sponge was introduced into the vagina, but this gave rise to so much irritation, that it could not be borne.

Finding it impossible to succeed with the ordinary instruments, M. Rognetta contrived a new kind of pessary, which he calls the cylindrical. This new pessary has, according to the author, numerous advantages over those already in use. It is made altogether of pure gum-elastic, without any internal tissue or body, and hence the new instrument may be made in a few hours, while it requires at least two months to make a common pessary of the smallest size. It is also more soft, and much less expensive, than the common pessary, and the secretions of the vagina have no effect on its substance.

The cylindrical pessary is fixed by means of three bands of strong tape passing round the hips and under the perinæum, and the circular band is, moreover, supported by suspenders passing over each shoulder. The displaced bladder having been reduced, the new pessary was applied, and was soon followed by the most happy effects. The patient can now make water as well as she could before her complaint; the pains have disappeared; she has recovered her flesh; commenced again the exercise of her profession, can walk freely, and even dance, without feeling any inconvenience from the instrument, which she constantly wears. However, when the pessary is removed, the tumour returns in a slight degree, and the woman feels a difficulty in making water.

The considerations to which this case give rise are numerous. The pathological anatomy of vaginal cystocele, and its causes, are altogether new subjects in surgery, for authors have rather repeated what they have heard and read, than what they have seen or observed. From an anatomical examination of the figure, disposition, and relations, of the urinary bladder with the vagina, womb, rectum, and peritoneum, it results that when the anterior wall of the vagina is lacerated or weakened, the bladder, which rests upon it, may descend to the external parts of

generation, and project beyond them, and that such descent must give rise to frequent desire of passing the urine, and difficulty in its excretion; that the space covered by peritoneum, between the bladder and uterus, yielding easily to a compressing force, forms a hollow in proportion as the bladder descends through the parietes of the vagina, and in some cases they become so infundibuliform, that a knuckle of intestine or epiploon may engage in it, and form a second hernia; finally, that as the lower part of the bladder is not covered with peritoneum, vaginal cystocele is not furnished with a sac properly so called.

The mode of connexion of the uterus with the vagina presents two remarkable peculiarities, which may throw some light on the causes of this disease. The posterior paries of the vagina is much lower than the anterior, hence arises a large cul-de-sac at the posterior part of the os uteri; the second peculiarity has been much less noticed than the former—viz. the angle formed by the line of union between the vagina and the uterus, hence women in whom this utero-vaginal angle is more marked anteriorly are more predisposed to vaginal cystocele, because the space between the neck of the uterus and the postero-inferior part of the bladder is much increased. Moreover, when the uterus is distended, and has a tendency to anteversion, the bladder pressed from above downwards by this organ, dilates itself on either side, and has a wonderful tendency to form rupture into the vagina either anteriorly or on the sides. Finally, if the bladder have already descended into the vagina, and the uterus have become affected with prolapsus in any degree, the second disease must inevitably increase the first, when the neck of the uterus will push down the bladder before it, and, consequently, augment the difficulty of making water.

In order to clear up as much as possible the nature of the formation of vaginal cystocele, the bladder was injected with water, and forcibly pressed down against the anterior wall of the vagina; this experiment was repeated in various forms on several female subjects, and the author deduces from them the following results:—

1st. In order that a vaginal cystocele should occur, the anterior wall of the vagina must be very lax, and it should be acted on by some internal force, such as the efforts of a violent cough.

2nd. Relaxation of the membranes composing the vagina is not sufficient to produce this hernia, the bladder must also be habitually distended with fluid.

3rd. When we find a woman affected with vaginal cystocele, it is extremely probable that the disease is complicated with enterocele or epiplocele.

If we examine the various cases of this disease which are scattered through several volumes, we shall find that symptoms of vaginal cystocele are sufficiently clear and distinct. The entrance of the vagina contains a red fluctuating tumour; when this is pressed, the woman who hitherto has found the greatest difficulty in making water, experiences a strong desire to urinate, and perhaps passes a little of this fluid. It is impossible to pass a common female catheter into the bladder, on account of the manifest displacement of the urinary canal. The tumour is considerably diminished as the urine is drawn off and returns again when more fluid is collected in the cavity. In addition to these symptoms there are often marks of constitutional derangement, the woman is tormented with constant pains about the pelvis and loins, and frequently falls into a state of emaciation which proves her constant suffering.

As to the pathological anatomy of this disease, nothing positive was absolutely known, until the description published by Burns of Glasgow, in the *Transactions of the Medical Society of Edinburgh* for 1824, and which may be consulted in Sir Astley Cooper's work on Hernia.

The treatment is sufficiently simple, but the difficulty is to obtain a pessary which will keep up the bladder, constantly tending to present itself at the great labia. The difficulty of adjusting an instrument so as to fulfil this important indication appeared so great to Sir A. Cooper, that he pronounced a patient affected with vaginal cystocele incurable, and dismissed her from the hospital, although the *Observationes Anatomicæ* of Sandifort (tom. 1, cap. 3) contain a case in which that sur-

geon was enabled to cure the disease, radically, by employing, several years a cylindrical pessary of cane, covered with wax, and surmounted at the top by a large piece of sponge.

The new cylindrical pessary of Dr. Rognetta may be employed for all cases of prolapsus, whether simple or complicated with a prolapsus of the vagina or hernia of the bladder. Before constructing the pessary, the author is in the habit of measuring the length and capacity of the vagina with the finger. If the cavity be not very large and lax, he employs a cylinder of from eighteen to twenty lines in thickness, and from two to three inches long. The method of making the cylinder is extremely simple. A large bottle of India rubber is to be softened in warm water, a hole is then cut in the bottom of the bottle, and the edge or circumference of the hole is doubled in and compressed against the internal surface until it becomes quite adherent to it. The bottle is now again to be softened in water, the neck of the bottle being inverted and passed into the hole just mentioned, it is there fixed with a small ivory or horn ring to which the tapes are afterwards to be attached. The cylindrical figure is easily given by shaping the bottle well softened upon a wooden mould of convenient size. If the pessary be required for a young girl, or a woman whose organs are not much relaxed, it may be constructed by cutting a longitudinal strip out of a bottle of the elastic gum, and shaping it when well moistened on a small cylinder of wood, taking care to preserve the original neck of the bottle in order that the ivory ring may be more conveniently attached. When the female is young and the vagina narrow, the pessary is sufficient, without any additional support to fulfil the object of its application; but in the contrary case the use of the tapes is indispensable.

Such is the ready and simple manner in which the author proposes to form pessaries adapted to the various descents of the uterus, &c.

THE LANCET.

London, Saturday, December 21, 1833.

Not a few of the readers of this journal have expressed surprise, that during the recent discussions on medical reform in the societies of London we should have maintained a marked silence respecting those "deeply interesting proceedings." Such conduct may have appeared strange, though it seemed to us that any other course on our part would be far more extraordinary.—Was "THE LANCET," after ten years of unremitting labour in the cause of medical reform, to enter the arena of contention *anew*, and thrust and tilt with untutored, uninitiated, novices? The question of medical reform was a *new* proposition to the medical societies of London, whilst it had been considered in all its bearings, and worn, many years since—as was said by an intelligent correspondent—actually worn *threadbare*, in the pages of this journal. And who can have failed to remark that the speakers in the late debates have been nibbling at some of the most insignificant of medical abuses, when, at the very same time, week after week, we were contending that the whole system out of which those abuses arose should be utterly and for ever abolished by an Act of the Legislature?

But we had other reasons for not resuming our medical horn-book, while the Societies were debating the subject of medical abuses. We had other reasons for not going back to the nursery, and again taking on the medical leading-strings. In short, it was our business to *watch* the conduct of the MEMBERS of the medical societies—to observe the signs of reason, passion, and self-interest, exhibited in them,—to present to the profession and to

the public correct representations of the scenes we might witness,—to express our approbation of whatever might appear meritorious in their proceedings, and to condemn whenever condemnation was necessary. This was the course which prudence prescribed, and the discretion we exercised has been already rewarded. In short, why should we, at this advanced period of the inquiry, voluntarily assume the disagreeable task of attempting to liberalise the sordid, to guide the obstinate, to correct the prejudiced, or to instruct the ignorant? The necessity of a change in the medical constitution of this country, has been indisputably proved by us more than one hundred times. Why then should we make a retrograde movement for the purpose of examining the characters of a disease which is now generally understood, instead of applying our minds to the consideration of the remedy which we know to be imperiously demanded by the urgent and threatening indications of the malady? Accordingly, we left the medical societies of London to hold their consultations on the "truly interesting case," without obtruding on them, at this particular juncture, the opinions which we have so repeatedly advanced on former occasions.

Has the "consultation," then, terminated? We will not say as much. But, as we had been led to conjecture, there is much discordance of opinion concerning the treatment necessary to be adopted. One party of advisers recommends that no remedial measures should be prescribed; another urges the use of ill-arranged, unchemical, agents; and a third set strongly insists on the propriety of resorting to the only philosophical means of cure. Here, then, we may at once advert to our brief report of the proceedings of the *Westminster Medical Society* on Saturday evening last.

It is already known, that the motion for the institution of a FACULTY OF MEDICINE was carried on the 7th inst., in a crowded assembly; and that an amendment, recommending the appointment, by Government, of a "Board of Commissioners to superintend Medical Education and Medical Practice," was negatived by a majority of at least twenty to one. The Tory clique, the Conservative gang, the Bats and Corruptionists,—well knowing that the generality of Reformers are so sanguine in their expectations, are so uncalculating with regard to the measures necessary for securing results, so blind to the measures and real designs of the Dubs and Purcs, who, while they profess to be "friendly" to medical reform, at once hate and dread that important national cause,—immediately, in their usual quiet, unpretending, way, demanded a ballot for the next evening, claiming the exercise of that prerogative in such a *naïve* manner, that few persons, besides themselves, expected that it would be pushed to a manual execution. The night of balloting having arrived, the success of the weekly labours of the Bat and Dub clique is apparent, in their counting against the motion (proposed by Dr. JOHNSON) for the institution of a FACULTY OF MEDICINE, thirty-one votes, while their opponents mustered but twenty-one. Now, observe. In an overflowing room, the Faculty motion was carried with acclamation; yet, by industry, by zeal in a bad cause, by intrigue, aided, too, by the unreflecting supineness of the Reformers, that motion is subsequently cancelled by the miserable votes of thirty-one persons.

Anomalies of this description, although somewhat disgusting, are not without their use; and this may be set down as an axiom, that the unjust triumph of the few, is ever one step towards the just victory of the many. Hence, the result of the balloting on Saturday evening, presents to us a most cheering source of con-

solation. In the absence of the fact, that thirty-one of the *Bat party* have actually voted against a consolidation of the medical law, against an amalgamation of the interests of the whole body of the profession —a declaration that many of the *oral* advocates of a *bona fide* scheme of medical reform were false-hearted, were pretenders, impostors, and the enemies of that cause, would have been denounced as a gross calumny, and would have been received possibly with little credence. Now, however, the visor is up, the mask is off, and if we cannot actually denounce by name those enemies of an honourable rational change in the system of our medical polity, we know that it has enemies, and malignant ones too, standing in the very ranks of the best, most honest, and most ardent of its friends and supporters. This discovery may have been made at too late a period. We have now *time* to guard against every manœuvre which treachery and baseness may invent. Had the decision of the Society, in favour of the FACULTY, remained as it stood on the 7th inst., the mock-reformists would have carried on, *in secret*, a most dangerous game with the Ministry, and numerous members of Parliament. The reformers, on the contrary, believing that there was little or no difference of opinion on the subject of effecting a thorough change in medical law, would have been lulled into repose by the supposition that all was safe, and that the victory, virtually won, had only to be announced nominally, to determine its final consummation.

Under such circumstances, treachery would have wholly occupied the field, and Members of Parliament would have been industriously ear-wigged to the effect that petitions for medical reform had only come from a few insignificant places in the country,—that petitions, praying for inquiry before a Committee of the House of Commons, had only emanated from a couple of insignificant societies in London, —that at the debates on the question, not a fourth of the members attended on any one occasion,—and that those who demanded a change in medical law *had not* DARED *to hold a public meeting* on the subject,—had not dared to convene in the metropolis an *aggregate meeting* of English, Irish, and Scotch practitioners, and to submit a proposition for the institution of THREE FACULTIES for the three great departments of the empire, to be assimilated in their functions, and controlled in their prerogatives by one Act of the legislature.

This would have been the cunning, cozening, cheating, knavish language of the Bats, Dubs, and entire host of corruptionists. Fortunately they have outwitted themselves, and shot completely beyond the mark. An AGGREGATE MEETING OF THE PROFESSION is now indispensable, and we understand that arrangements are already in progress for holding it in London in the month of February. Would it be convenient for deputations from bodies of country practitioners residing in different parts of the empire to attend on the occasion? It would afford us satisfaction to be furnished with immediate information respecting the practicability of such an arrangement.

Parliament is to meet for the dispatch of business on the 4th of February, but it is probable that the motion of Mr. WARBURTON for the appointment of a "Committee of Inquiry" into medical abuses, will not be brought forward until about the third week of that month. A general meeting of the profession should take place before that motion is introduced to the House of Commons, because the decision of an aggregate meeting of British medical practitioners will go far towards determining whether a Committee of Inquiry should be adopted or rejected by a reformed branch of the legislature.

In The Lancet of the 7th instant, we inserted two letters, bearing the signature of "A Late Pupil of Guy's Hospital." In those documents there were various charges made against us, all of which, it was alleged by our correspondent, were founded on the statements relative to *Guy's Hospital*, as a medical school, which appeared in the "Student's Number" of The Lancet, published Sept. 28th last. With a view to perspicuity and brevity we shall now condense the accusations, and give them a specific form, and with a view to our own and our readers' convenience we shall *number* each charge, so that the replies we have to offer may be at once referred to the specific charge which each answer is designed to refute.

1st. It is alleged, generally, that our statements were untrue, illiberal, and unjust.

2nd. That our report was "erroneous from beginning to end."

3rd. That it was "erroneous to allege that there were no clinical lectures with the advantage of clinical wards."

4th. That it was "erroneous to assert, by implication, irregularity of attendance on the part of the physicians and surgeons."

5th. That it was "unfair to omit totally any complimentary remarks on the different lecturers."

6th. That it was "untrue to assert that the proceedings were secret."

7th. That "the names of Messrs. Cock and Hilton, two of the best demonstrators in London, were entirly passed over."

8th. That we "omitted to record the acknowledged fact, that Mr. B. Cooper is one of the greatest favourites with his class of any of the anatomical lecturers."

9th. That we were "silent as to the acknowledged merits and uniform kindness of Dr. Addison."

10th. That we were "silent respecting the estimable qualities of the other numerous lecturers."

11th. That "no mention was made of the great number of patients admitted into the hospital."

12th. That "not a word was mentioned respecting the *Physical Society* which holds its meeting at Guy's Hospital."

From this list, not one item of accusation is excluded. And what is our reply to them,—taking the charges in numerical order?

Answer 1st. The allegation is itself wholly "untrue, illiberal, and unjust," as we shall presently prove.

2nd. This is an unsupported assertion.

3rd. We did not state that there were no clinical lectures, but, on the contrary, we announced distinctly that clinical lectures were "*promised*." As we did not indicate that the apartments of the hospital were *bedless*, we must leave our correspondent to explain what he means by "clinical wards."

4th. We did not "assert by *implication*" that the medical officers of the hospital were irregular in their attendance; for we declared, in terms of *unequivocal* import, that they were grossly, scandalously, irregular in the discharge of their official duties, and referred minutely to days and hours when there had been committed unpardonable breaches of obligation towards both patients and pupils. Has our correspondent dared to test the accuracy of the specific allegations with respect to the irregularity of attendance, by descending from his wholesale charge of inaccuracy of statement, to the refutation of a single item? But as the proofs already furnished appear to be insufficient to satisfy his too-confiding mind that every stipulated engagement has not been fulfilled by the functionaries whom he so vehemently lauds, we must present him with a few additional disagreeable particulars in confirmation of the accuracy of our charge

against them of irregularity of attendance, and consequently of neglect of the patients as well as the pupils:—

A.—On Saturday, September the 21st, a coal-heaver, aged 26, in passing along a plank from a barge to the shore, with a sack of coals on his shoulders, and labouring at the time somewhat under the effects of liquor, slipped, and fell into the water, his face striking against the plank, by which accident he fractured the inferior maxillary bone on the left side. He was picked up in a state of insensibility, and immediately carried to Guy's Hospital. The hour of his admission was 12 o'clock, mid-day, Saturday. He was taken into the accident-ward, and there left, without being visited either by the surgeon under whose name he was received, or any other officer of the establishment, from that hour (12 o'clock) until 11 o'clock on the following morning, Sunday, TWENTY-THREE HOURS AFTER HIS ADMISSION, when Mr. Callaway, in the course of his usual attendance at the hospital on the Sabbath-day, saw him for the first time. Mr. Callaway having examined the patient, immediately asked what had been done for him. The ward-book was without entry on the subject, no one around knew anything about the man, and the dresser of the week was not present. The nurse, on being called and questioned, stated that the man was admitted on the previous day, at 12 o'clock, and said that nothing whatever had been done for him. Mr. Callaway on hearing this, and finding that the man's broken jaw had really not received the slightest surgical aid, gave vent to his feelings in indignant terms, pronouncing it to be a case of "scandalous" neglect, and intimating that if the treasurer * were acquainted with the occurrence, it would excite his severest displeasure. Mr. Callaway then ordered the necessary applications for adjusting and supporting the displaced portions of the fractured bone.

As Mr. CALLAWAY was the only *eye*-witness for the hospital on a certain celebrated trial, his testimony, of course, will be deemed the best that can be offered on the present occasion.

5th. We have to urge the plea of ignorance in reply to this charge, not having known that the different lecturers were deserving of complimentary remarks, with the exception of Dr. BLUNDELL, who, be it recollected, does not belong to the offset Guy's School in Weston-street.

6th. Is it not attempted to conduct the whole of the proceedings of the hospital in secret? Was there not, when our article was published in September, a stupid notice stuck up in the establishment, interdicting the admission of the reporters of the medical press? Have not pupils been openly insulted, who have been seen taking notes of the cases, or have been heard to make critical remarks on the operations? But the secret proceedings have even been carried beyond this, operations having frequently been performed in the private apartments of the sisters, thus excluding the pupils from an opportunity of seeing that practice for the purpose of observing which they are made to pay so heavily. The fact that the reporters of the press are excluded, is a reply sufficient to justify our statement of the 28th of September, and utterly to damnify the medical character of the institution. Thus is our allegation of secrecy, with respect to the public, fully and unimpeachably proved, and now we will adduce a fact, in illustration of the secrecy which is sometimes observed even with respect to the students themselves:—

B.—A patient, a female, was in the hospital, in September last, with stone in the bladder, under the care of Mr.

* Mr. Callaway was correct in referring power to the treasurer, for the governors of this hospital, under the authority of King Harrison, appear to be reduced to figures without heads or tails. In truth, they appear to be about as influential in the government of the establishment, as noughts before an unit.

KEY, whose intention to extract the calculus by operation was made known, as is sometimes the case, to the pupils. Tuesday, in the last week but one of September, was announced as the day of operation, when Mr. KEY had determined to attempt the high operation. On the day named, however, the pupils were told that it would not then be performed, but that it would take place at the same hour on the following day, when it was expected that a large number of pupils would assemble. On the Wednesday, however, immediately after the "taking in," at about a quarter to 12, previous to the arrival of the mass of students, and in the absence of other surgeons, Mr. KEY suddenly and unobserved, except by two or three persons, ran up-stairs, and at once performed the operation,—the high operation for the removal of a calculus from the bladder of a young woman!

This was not only a secret, but a very curious operation. What thinks our correspondent?

7th. The names of the demonstrators of St. Thomas's and other hospitals were passed over in silence. Where, then, was the partiality?

8th. We could not record the fact, because we did not know it, but we believe, as we have before stated, that some of Mr. B. COOPER's pupils are in the habit of saying that their lecturer is a "damned good fellow."

9th. We have to plead ignorance again, as we knew nothing of the acknowledged merits or uniform kindness of Dr. ADDISON.

10th. We have once more to urge the previous plea, as we did not know that the other lecturers, *as* lecturers, had any qualities which were estimable.

11th. In not mentioning the number of patients admitted into the hospital, the same rule was observed with respect to other institutions, but in order to supply the omission of which our correspondent appears to think us guilty, we will present him with a few facts illustrative of the advantages which the patients themselves occasionally derive from being admitted into this hole-and-corner establishment.

C.—An elderly woman was admitted into the hospital in the middle of June, not a great many years ago, under the care of Dr. ADDISON, with the following symptoms:—She complained of constipation, vomiting, pain and tenderness of the abdomen, and great pain and tightness across the pit of the stomach. The case was pronounced to be a "bilious attack," and she was ordered to be cupped at the pit of the stomach, and to have a blister applied to the same part. Cathartic pills were also ordered her, to be taken immediately, and followed by an aperient mixture, continued till the bowels were well opened. Some time after the application of these remedies for the "bilious attack," it was discovered by THE SISTER,—*one of the* FEMALE PHYSICIANS of the establishment, that the patient was afflicted with STRANGULATED FEMORAL HERNIA!!

D.—A baker was admitted much about the same time as the above case under Mr. KEY, for what that gentleman called "chimney-sweepers' cancer of the scrotum." The case, however, was really one of *psoriasis*, produced by the constant irritation of the part by flour. The man, during the last twelve months, had had reducible hernia, and a hernial swelling continued the whole time he was in the hospital,—a fact not known by Mr. KEY. One day, during the third week of June, a portion of gut descended, and on the Friday of that week the man laboured under the following symptoms:—oppression and pain in the region of the stomach, eructation, and frequent vomiting, constipation, and great pain and soreness of the abdomen generally, with expression of much anxiety in the countenance, the pulse quick, hard, and thready. Mr. KEY saw him, for the last time, on the day previous (Thursday), during his walk round the wards. In the *absence* of Mr. KEY, on the Friday, the *assistant apothecary* was the functionary in attendance, and that

individual now treated the patient for his new symptoms in the following manner:—He ordered the man to be bled, to have an enema, to take calomel and rhubarb, and to have an effervescing mixture. This course was pursued till the following Monday morning, when the patient died, without his having derived any assistance from Mr. KEY, from the time the new train of symptoms, denoting strangulation of the intestine, set in. The fatal result, so sudden and unexpected, excited surprise in the minds of the deceased's friends, who, on wishing to know the cause of death, were informed, that without an examination of the body *it was difficult to state.* To an examination they immediately consented, and it was conducted by Dr. HODGKIN and Mr. KEY, in the presence of the friends of the deceased and several pupils. A knuckle of *strangulated gut was found in the hernia*, so far gone as to be in a state of gangrene, and this piece of intestine was raised, and coolly exhibited to the friends as showing the result of *excessive inflammation of the bowels*, thus satisfactorily explaining to the deceased's friends the *cause*—the *natural* cause—of the poor man's death! Out of fifteen successive cases of strangulated hernia, which occurred at this hospital within a given period, and for the relief of which operations were performed, only three terminated in the recovery of the patients.

We insert in this place a brief communication received from a correspondent on Tuesday last.

To the Editor of THE LANCET.

SIR,—I should feel extremely obliged if, through the medium of your valuable publication, you would make some inquiry respecting a case of strangulated femoral hernia, admitted into Guy's Hospital on Friday, expressly for the purpose of an operation. The patient reached the hospital in the morning, and a great number of students assembled at the appointed hour, three p. m., to witness the operation, when they were much surprised to hear that it was to be delayed till eight in the evening. During the interval she became much worse, and in the course of the evening expired, no operation having been attempted. The insertion of this note may be the means of gaining some explanation on the subject, which appears to many students in the hospital totally incomprehensible.—I beg to remain, Sir, your obedient servant,

Dec. 17th, 1833. P. Q.

12th. Our silence concerning the *Physical Society* was perfectly justifiable, because we had nothing to advance in condemnation or commendation of the institution.

Having inserted the whole of the counts contained in the indictment of our correspondent,—having pleaded Not Guilty, and given in evidence this our defence,—we appeal, in perfect confidence as to the result, to every impartial reader, for his verdict on this occasion.

WESTMINSTER MEDICAL SOCIETY.

Saturday, December 14, 1833.

Dr. COPLAND in the Chair.

THE debate on the question of medical reform having terminated, the floor of the Museum no longer presented the crowded appearance of the last three evenings. Plenty of room was to be found to-night on the benches. In fact, as it subsequently appeared, there were but about fifty members present.

INFLUENCE OF THE MIND ON THE BODY.

Dr. JAMES JOHNSON occupied attention for a short time by the relation of the following case, which he had lately attended, exemplifying the intimate connexion of mind and body. A young lady, residing in London, had formed a strong attachment to a gentleman, to whom she was about to be married. Previous to the intended event she visited Brighton with her friends, and was at that time in perfect health, being of a sound and excellent constitution. While there, however, she unexpectedly received a letter communicating intelligence which placed the marriage beyond all hope of accomplishment. The effect produced on her mind was extremely affecting, and was followed by a depression of spirits of the most extraordinary kind. She from that hour declined all conversation, and never more spoke, except in answer to the most ur-

gent and particular questions. At the same time she began to fall away in person, though no other perceptible physical effect was apparent. Her appetite did not diminish, and the circulation went on seemingly as during the best health. No lesion whatever of structure or function but that of nourishment could be detected at any period during the remainder of her life, which was marked, without interruption, by progressive emaciation, reducing her from considerable plumpness to a perfect skeleton. She died in London eleven or twelve weeks after the shock, in such a state of marasmus as was rarely, if ever, seen in phthisis, tabes mesenterica, or any other disease attended by diminution of flesh. The processes of every bone in her body could have been demonstrated as completely as though it had been dissected. The direct cause of this reduction was totally unaccountable to her medical attendants, unless ascribed to the prevalence of absorption over nutrition, as no post-mortem examination was, under the delicate and afflicting circumstances of the case, asked to be made.

Mr. KING ascribed the emaciation to the cessation of the proper influence of the nerves in the process of nutrition.

Several instances were mentioned in which powerful effects produced on the mind had operated as powerfully on the body;—amongst them, instances of instantaneous jaundice from mental shocks, epileptic fits, and death.

A BALLOT ON THE "8TH RESOLUTION."

The conversation was abruptly interrupted by such a scene of hubbub as was never before witnessed in the Society. The disturbance originated in the ballot which was applied for by Dr. Gregory at the last meeting, after the loss of his proposed amendment to the 8th of the medical reform resolutions, and the passing of the resolution itself by the Society. On that occasion his amendment, which was for a "board of commissioners" to govern the medical colleges, was rejected by an immense majority, — only the mover, seconder, and one or two others, holding up hands in its support. When the original motion for one Faculty of Medicine was put, but thirteen hands were raised against it in a room which was crowded to the door. The demand for a ballot was generally laughed at, and—by the great bulk of the Society—it was not expected to be persisted in on the evening of the 14th. This impression was stated to-night by a member, whose remark that the demand of Dr. Gregorywa only "an ebullition of feeling, and a want of courtesy to the chair," was received with cries of "Hear, hear," from several quarters; for, indeed, the unqualified decision of the Chairman, after the show of hands on the 7th inst., was, whatever the law appealed to, might authorise or produce, considered to be the decision of the Society also. The mover of the amendment, however, had determined to press the ballot, doubtlessly with a knowledge that an extraordinary party of friends would attend to support it, for this evening a force (as subsequently appeared) of more than double the previous amount, mustered to blackball the eighth resolution, while its advocates, with the exception of about twenty gentlemen, slumbered at home. Neither Dr. Somerville, Dr. Sigmond, Dr. Epps, Mr. Costello, Dr. Blicke, Mr. Greenwood, Mr. Griffiths, for instance, was present.

The CHAIRMAN at 9 o'clock presented the ballot-box for votes on the *amendment* of Dr. Gregory.

Dr. FERGUSSON instantly objected to this proceeding, and insisted that the ballot had been applied for on the *original motion*.

The CHAIRMAN appealed to the minutes of the Secretary in support of the contrary opinion, and after many conversational remarks and replies, insisted on taking a vote on the *amendment*, refusing to hear any comments on the subject.

Dr. FERGUSSON replied with warmth, and demanded the opportunity of speaking.

The CHAIRMAN insisted on silence.

Dr. STEWART "begged to be heard."

Mr. HUNT "claimed attention," and strongly denounced the "attempt to stifle opinion."

Dr. JOHNSON "requested a few moments."

Another MEMBER begged leave "to say a few words."

Mr. CHINNOCK declared that the Society had already adopted the 8th resolution by its vote.

Mr. BURNETT explained his view of the demanded ballot, as Chairman at the last meeting.

Dr. GREGORY insisted urgently on the votes being taken on the original resolution, and declared that he never contemplated the ballot on the amendment.

Mr. LAVIES rose and stated, that this must be a new thought of Dr. Gregory, for Dr. G. had, at the close of last meeting, *actually come to him, and, in a consultation with him, had informed him that he had demanded the ballot on the amendment.*

Twenty spoke at once, and voices were raised to the highest pitch; "Hear, hear," "chair, chair," "order, order," "waive the question," "ballot, ballot," "shame," "silence," "gentlemen, gentlemen," "ha, ha," "disgraceful," "absurd," "only one

word," "allow me for a moment," and a dozen other such ejaculations were uttered and persevered in for a most tedious period, in the midst of which, and before any decision was arrived at,

Dr. GREGORY, apparently for a moment fearful (we speak from the impression which the act was calculated to create in the mind of an observer) that the tide was going in a direction contrary to its desirable course, walked to the table, and put in a black ball (proclaiming the fact) "against the 8th resolution," which ball, by the result of the hurley burley, actually reckoned against his own amendment, for, finally,

The CHAIRMAN triumphed, and put the amendment, which was declared to be again lost. He then put the original motion, when 31 balls appeared against it, and 21 were found in the opposite drawer. A laugh having gone round the room, quiet was restored, and the discussion of medical subjects was resumed.

HOPITAL DES ENFANS MALADES, PARIS.

SCARLATINA.

THE tendency of eruptive diseases in childhood to reign at certain seasons of the year, epidemically, is known to every one; but in hospitals appropriated solely to the treatment of children there are some which may be said to be endemic. Thus at the *Enfans Malades* of Paris there are examples of scarlatina to be seen during the whole year; the intensity and frequency of the disease are nevertheless influenced considerably by the reigning constitution of the year, and by the seasons. During the heat of the present summer scarlatina was very prevalent; during the month of August the disease lost much of its intensity, and has now completely disappeared. However, the entrance of one patient into the hospital is almost sufficient to give rise to the development of the disease in others—a circumstance which adds extremely to the mortality which exists in those institutions, as the contagious principle in most cases seizes upon children already reduced by other diseases. The common forms of scarlatina are sufficiently familiar to all physicians, and the diagnosis is considered as easy, but we have had frequent occasion to notice one form, which the French physicians designate by the term *piquetée*, and which in the outset may be readily taken for measles when the attention is confined solely to the cutaneous eruption, without a close examination of the premonitory symptoms. This error is the more likely to occur when scarlatina attacks (as we have often seen it do) a child already affected with cough, and when the eyes are inflamed and watery from the commencement of the disease. The following case, though mild in its nature, presents a good example of that form of scarlatina of which we have just spoken :—

Lebel, a boy, nine years of age, habitually enjoying good health, and of sound constitution, was seized on the evening of the 4th of October last with headach and general malaise. During the night his throat became affected, and deglutition was accompanied with pain. On the following day the boy was seized with a violent shivering fit, which was quickly succeeded by intense fever with vomiting, excessive epistaxis, and some delirium at night; there was no sneezing or coryza; the pain in the throat with the difficulty of deglutition became aggravated, and the eruption appeared on the evening of the 5th, when the child was brought to the hospital. On the morning of the 6th we found him in the following state: the face was moderately flushed; the patient had headach and intense fever; pulse 120; the tongue was rather dry, and covered with a white layer, through which a few red developed papillæ were seen; deglutition was difficult, and on examining the mouth we found the back of the pharynx covered with a red blush, and the amygdalæ considerably swollen; the voice was hoarse, as in the commencement of measles; but there was no running from the eyes, which were unaffected; the child did not cough, nor was there any diarrhœa, but constipation since the commencement of his illness; the respiration was perfectly healthy; the skin was covered with a multitude of small red points (*scarlatine piquetée*) in the intervals of which the integuments presented their natural colour; the eruption was closer, and more abundant in the folds of the great articulations; the joints of the hands and feet were neither swollen nor painful.

Borax, with Honey; *Emollient Clyster*; low diet.

In the evening, at three o'clock, the character of the eruption became much

better marked; the greater part of the skin presented an uniform redness; the pulse was more feverish, and the tongue had assumed decidedly the appearance peculiar to scarlatina.

7. To-day the eruption is fully formed; the face more flushed; the tongue has lost the white layer, become moist and red at the point and edges; the redness is diffused over the whole body, more marked on the trunk and lower extremities, particularly on the inside of the thighs, where it is evidently scarlatina; there is also a very great number of miliary vesicles on the abdomen, thighs, and arms; the skin is not very warm, and the pulse has fallen to 92; the pain in the throat and difficulty of deglutition continue; no pain of belly or head; the child did not sleep during the night, but was not affected as before by delirium; he coughs a little to-day; had one stool after the injection; the hands are not swollen, but the ankle-joints are slightly so, and stiff.

Gum Julep; Gargle of Barley Water and Honey; low diet.

8. There was slight bleeding from the nose this morning; there is less pain of the throat, and the amygdalæ are less swollen; the tongue remains clean and red; the eruption has lost some of its intensity, but the miliary vesicles continue in the same state; but little thirst; the child asks to eat; the pulse is 88, and tranquil; no stool.

Gum Emulsion; Bouillon.

9. The eruption is fading away on the trunk and extremities; the skin is moderately warm; pulse continues tranquil; there is no pain of the throat, and the tongue is losing its redness; but the short dry cough continues; the child sleeps well, and has a good appetite; one stool. *Cont. remedia.*

10. The scarlatina and miliary eruption have both nearly faded away; desquamation commences, and there is a smart sensation of itching in the skin; the cough has diminished, and become more soft; respiration gives a healthy sound to auscultation; no fever or diarrhœa; the child sleeps well.

Gum Emulsion with Manna; Bouillon.

11. Convalescence may be said to have commenced; there is no pain or redness of the throat; the pulse natural, 70. The epidermis is detaching from the neck and limbs in large flakes, accompanied with very smart itching. The child continued in this favourable state to the 18th of October, when he was dismissed the hospital.

The eruption of scarlatina is generally described by writers as commencing by intense red patches, which quickly become confluent on various parts of the body; but there are several varieties of the disease which do not correspond exactly with this description; one of these is the *scarlatine piquetée*, an example of which we have just given. In fact, when we first saw the child Lebel, it was not easy, from a mere inspection of the cutaneous eruption, to decide whether it belonged to measles or scarlatina. The physician by whom the child was sent to the hospital had diagnosticated rubeola, and some pupils, with the interne, at first inclined to his opinion; however, in this case, the premonitory symptoms were sufficient to point out the true nature of the affection; the pain of the throat, swelling of the amygdalæ, and redness of the pharynx, coming on without coryza, or affection of the mucous membrane, as sneezing, lachrymation, &c., gave the distinctive character of scarlatina, which the progress of the disease in a few hours put beyond doubt. But we have had occasion to observe several cases in which the presence of symptoms, which are usually the forerunners of measles, have contributed to throw much doubt and difficulty on the diagnosis. Scarlatina sometimes commences with excessive redness of the eyes, lachrymation, swelling of the eyelids, sneezing, and the hard, hoarse, dry cough, so peculiar to measles. Here it will be but prudent to wait until the eruption has assumed a decided character, before we presume to give any opinion on its specific nature. Finally, scarlatina and measles may attack the same individual at the same moment, and both eruptions may run their course together. Of this interesting fact, which has been denied by Underwood and many other writers on the diseases of children, we shall at another time report several examples.

We have been favoured by Professor Odle, of Oxford, through the hands of Mr. Bayley, of Fore street, with a copy of the document entitled "De Tempore et Exercitiis requisitis ad Gradus in Medicina Capessendos," which has just been issued by the University of Oxford. We have not room for its publication this week.

Dr. Turnbull's letter in our next.